

VOL. IV

MAY 18 1925
OLD SERIES VOL. LXXXI

No. 4

THE
AMERICAN
JOURNAL OF PSYCHIATRY

(FORMERLY THE AMERICAN JOURNAL OF INSANITY)

UNDER THE AUSPICES OF
THE AMERICAN PSYCHIATRIC ASSOCIATION

EDITORS

Edward N. Brush, M. D.

Charles Macfie Campbell, M. D.

Albert M. Barrett, M. D.

George H. Kirby, M. D.

H. Douglas Singer, M. D.

Henry M. Hurd, M. D.

Editor Emeritus

G. Alder Blumer, M. D.

Editor Emeritus

BALTIMORE
THE JOHNS HOPKINS PRESS

APRIL, 1925

Published Quarterly

Subscription, \$5.00 a Volume

Entered as second-class matter July 31, 1911, at the postoffice at Baltimore, Maryland, under the Act of March 3, 1879.

I. Schisoid and Syntonic Factors in Neuroses and Psychoses. <i>A. A. Brill</i>	589
II. Negative Histological Findings in Experimental Organic Processes. <i>Samuel T. Orion</i>	599
III. Mental Examinations of College Men. <i>Martin W. Peck</i>	605
IV. Dementia Præcox as a Type of Hereditary Degeneration. <i>Leland B. Alford</i>	623
V. Epidemic Encephalitis. Four Cases Complicated by Pregnancy, and a Preliminary Report of Experimental Therapy by Intravenous Injections of Acriflavine. <i>Edward A. Strecker and Gordon F. Willey</i>	631
VI. Interpretations of Manic-Depressive Phases. <i>Earl D. Bond and G. E. Partridge</i> ..	643
VII. Primitive Mentality and the Racial Unconscious. <i>William A. White</i>	663
VIII. Aseptic Meningitis in the Treatment of Dementia Præcox. <i>Robert S. Carroll, Everett S. Barr, R. Grant Barry and David Matske</i>	673
IX. Psychic Manifestations in Cases of Brain Tumors. <i>Frederick P. Moersch</i>	705
X. Homicide in Massachusetts. <i>Albert Warren Stearns</i>	725
XI. General Paralysis of the Insane During the Senescence. <i>Ira A. Darling</i>	751
XII. Prolonged Confusional States Simulating Dementia Præcox. Differential Diagnosis. <i>Alfred Gordon</i>	757
XIII. The Place of Psychiatry in the Medical School Curriculum. <i>Everett S. Elwood</i> ..	767
XIV. Association and Hospital Notes and News: The Eighty-First Annual Meeting of The American Psychiatric Association—Occupational Therapy Exhibit at Richmond—Meeting of the National Association for the Study of Epilepsy.....	775
XV. In Memoriam: Arthur W. Hurd, William A. Stone, Alma Evelyn Fowler, Wallace J. C. Aubry	781
XVI. Appointments, Resignations, Etc.....	787
XVII. Index, Volume IV.....	793

AMERICAN JOURNAL OF PSYCHIATRY

SCHIZOID AND SYNTONIC FACTORS IN NEUROSES AND PSYCHOSES.*

By A. A. BRILL, M. D.

Those who were trained in hospitals for the insane were impressed with definite psychotic types. Kraepelin gave us two well-marked entities, the dementia præcox and manic-depressive groups, which are the two outstanding impressive types of the functional psychoses. It was soon found, however, that these types were not always clean cut and sharply demarkated, so that many observers spoke of those cases which showed characteristics of both as "allied to dementia præcox" or "allied to manic-depressive insanity." Such classification simply meant that the patients showed traits of both diseases and depending on the preponderance of one or the other, he was put into this or that group.

I remember well the case of N., a young boy of 13 or 14 years, the youngest patient admitted to the Central Islip State Hospital during my service, who at times showed definite symptoms of a catatonic type, such as, mutism, cataleptic resistances and the snout cramp, which he often maintained for days, but otherwise was quite normal or sometimes slightly manic in his behavior. As I knew very little at the time about deeper mechanisms, he was a sort of mystery to me. When he showed the aforementioned symptoms, he was a catatonic præcox, but when after a few days he gave them up, he was quite normal to all intents and purposes. Later, when I went into private practice, I saw quite a number of similar cases from time to time and some that were even less pronounced. Some of these cases were

*Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

diagnosed by others and by me as psychoneurotics, although they did not quite act the part. That was before we knew much of the Freudian concept of the narcissistic neuroses, when one still thought of psychoneurotics as the transference neurotics or as something quite apart from psychotics. Gradually, however, the conviction forced itself upon me that there is a class of patients who are neither clean cut *præcoxes* nor psychoneurotics, and I described some of them in a paper read before this Association designating them as *paraphrenics*.¹

I had in mind patients who were nearer to the dementia *præcox* or paranoid type than to any other group, they seemed to get along quite well outside of hospitals, and some even played quite a prominent part in life. Even then I was aware that there were others who were still more adjustable, and stated at the time that all such persons might be potential psychotics so far as reaction to the world is concerned, that there are manic and *præcox* types who are, so to speak, quite normal. Moreover, I also saw cases who at first impressed me as typical transference neurotics (hysterias and compulsions), who later turned into typical cases of dementia *præcox*. Gradually the feeling grew on me that everybody represented some type of character reaction in terms of the psychosis, and I easily discerned in daily life manic, *præcox*, and mixed types. Let me cite briefly a few cases to illustrate: Dr. Wm. H. White referred to me a case of hysteria whom he had treated for over a year; the patient was helped to a certain extent but he could go no further with her. She reacted like a psychoneurotic during our first meetings, but there was a certain affective impenetrability that could not be overcome even after a few months. Unlike hysteria, there was neither any positive nor negative transference between us. I finally decided that she was not a case of hysteria, that the prognosis was bad and I had to resort to all sorts of maneuvers to get rid of her. She was no case for analytic treatment. I have no doubt that the physicians who treated her later came to the same conclusion. As she was not suffering from hysteria and showed a *præcox* affectivity and paranoid trends I called her a *paraphrenic*.

¹ Studies in Paraphrenia, N. Y. Medical Journal, November, 1919.

Some cases may give a clear impression of psychoneuroses for even years and then change, so to speak, into a psychosis. Once a year, for three years, McG. spent a week in New York City for business purposes and each time he called on me to discuss his malady. He was a Westerner, 32 years old, single, and presented a typical compulsion neurosis with all its manifestations. When I saw him the first time, I was convinced that I could cure him if he would subject himself to prolonged treatment which was impossible at the time. When he visited New York the following year I saw him once or twice, and finally he arranged his affairs and came prepared to be treated psychoanalytically. Dr. M. S. Karpas was just then starting in private practice so I referred the patient to him. The analysis seemed to proceed in the usual way for about two months when seemingly all of a sudden the patient began to hallucinate; he turned out to be as typical a *præcox* as he was formerly a compulsive neurotic and we had to send him to the River Crest Sanatorium.

A similar case is that of Mr. W., 52 years old, whom I diagnosed as a compulsive neurotic and referred to Dr. Kardiner for analysis. Here again, it was the same story. He was treated for about a year when he developed hallucinations and delusions and has remained a paranoid *præcox* ever since.

Many similar cases could be cited where it was extremely difficult to tell whether the patient was a psychoneurotic or psychotic although there were no such marked changes as in the cases mentioned.

Now, the questions that we may ask are: What are the fundamental reactions in those cases that we have to diagnose as allied to something else? Why do some patients change from psychoneuroses to psychoses? Why do some apparently normal individuals manifest a preponderately manic or *præcox* reaction? Is there anything common to all of them? And, last but not least, can psychoanalysis throw any light on these problems?

In his very illuminating work. Kretschmer² contrasts the milder forms of dementia *præcox* as found in latent schizophrenics with the milder types of manic-depressive insanity, designating them as schizothymic and cyclothymic. He also followed the schizoid re-

² *Über Körperbau und Charakter*," Springer, Berlin, 1921.

action in healthy individuals and in persons of healthy families and contrasted them with the cyclothymic. Bleuler³ states that he can demonstrate this type of reaction in every person, to be sure in extremely changeable degrees. The expression "schizoid" which gives the picture of schizophrenia in extreme forms thus designates a type of psychic being and psychic reaction, which exists in a more or less pronounced form in every person. The manic-depressive concept as is known to every psychiatrist went through a similar development. At first the cyclothymic forms were added to Kraepelin's clear types, and later also the manic and melancholic moods which continue for decades or throughout the life of the person. Kretschmer finally found that he could include in it persons who although they never become sick evince an analogous type of reaction as far as their affective rapport to the outer world and their inner self is concerned. This form of reaction too, Bleuler thinks, could be demonstrated in every person. Kretschmer designates this type as cyclothymic, but as this name is somewhat misleading, to quote Bleuler, "The majority of such cases are neither cyclic nor thymic," Bleuler proposed for this reaction the name syntononic. *Syntononic* not only signifies "equally toned" but also means to be "attuned" and in "harmony." That is to say, the affectivity of the person reacting for the most part syntonically harmonizes with the people of his environment and with the situations of his outer world, and at the same time his actual feelings agree internally and like his strivings are uniform. When a syntononic person is happy or sad he is wholly so, that is, he is entirely controlled by the existing affect.⁴

But if a person is neither exclusively schizoid, nor entirely syntononic, one can only say that he is preponderatingly schizoid or preponderatingly syntononic, which means that in proportion to the one, the other reaction is very strikingly developed. Thus, if a person shows a manic attack, it means that the syntononic components predominate qualitatively and quantitatively to a morbid degree. The schizoid components may also exist in him and mix

³ Bleuler: Die Probleme der Schizoidie und der Syntonie. Zeitschrift für die gesamte Neurol. u. Psychiatrie, Band LXXXVIII, Heft 4-5.

⁴ Bleuler: *l. c.*, p. 374.

with the syntonicon in any sort of proportion; thus a manic or melancholic patient may show paranoid or schizophrenic trends.

But if we find in every person both schizoid and syntonicon capacities of reaction, Bleuler questions whether it is even necessary to make a differential diagnosis between schizophrenia and manic-depressive insanity, particularly where the symptoms of both are largely mixed. Bleuler claims that when this is the case, the patient cannot be put into any of the accepted classifications, and that the diagnosis or prognosis should be "to what extent schizophrenia" and "to what extent manic depressive?"⁸ and proceeds to demonstrate to us how those principles fit in with our observations of psychotic reactions even in organic cases,⁹ and help to explain for example why some paretics and seniles react with a disturbance of affectivity and others in a paranoid manner. But in order to understand the mode of these reactions in the psychoneurotic and in the so-called normals we must hear more about them from Bleuler.

The syntonicon types alone are obviously healthy and normal, and that is true only of the very mild cases. Says Bleuler if we had to recreate Adam we would form him syntoniconally with a slight manic mood and thus make him into a person with a "sunny disposition." This type of personality shows very strong endogenous and exogenous affective fluctuations. Physically it belongs to Kretschmer's *pyknic* type evincing a marked tendency to obesity, a delicate skin and a somewhat weak stooping posture. To paraphrase Bleuler, the syntoniconally reacting person is uniform in all his functions, his whole psyche is in accord with his present environment or with the idea that happens to possess him at the time. "He is a social being *par excellence*, like the bees or ants." In addition, he appears lively and mobile and his feelings influence his thoughts and actions. His logic is good unless the affect becomes too strong.

The *schizoid* mechanisms in contradistinction to the syntonicon have so far been described only in the extreme, abnormal, psychopathic, or directly in psychotic types. In everyday life the schizoid is a person who preserves his independence to the en-

⁸ Bleuler: Text Book of Psychiatry, p. 175, translated by A. A. Brill, The Macmillan Co., N. Y., 1924.

⁹ Bleuler: *l. c.*, p. 176.

vironment; he endeavors to withdraw from the influences of the living as well as from the dead environments and to follow out his own aims. In the pathological state such behavior assumes active, hostile, or passively dereistic attitudes, and in the milder forms it leads to a turning away from reality, or to an active transformation of it for his own aims, or to an adaptation to reality through inventions thus changing it in some way for his own ends. The schizoid may be persecuted or involved in litigations but he forever seeks and finds new paths or exits, whereas the syntonik does not even feel the conscious need for any change, or thinks it impossible to look for it. The schizoid's lack of respect for reality makes him strive to change it in some ways or to turn inwardly to himself. Whereas, the syntonik possesses the capacity and desire to live through his feelings, which are always influenced by the outer world, the schizoid can prevent them from discharge, save the motive power for other times when new forces act in the same sense, and hoard and reinforce them. In this way he not only gains power but also opportunity and time for reflection and modification. He can postpone the display of his own attitude (affect) to a later period or even conceal it and thus give the impression of being a cold or indifferent individual without any feelings. He can also connect his affect symbolically with another impulse, "displace" it to excesses or "sublimate" it into higher aims as seen in Edgar Allan Poe and others. He may have a distinct feeling for doing good, but he does it in such a way that no one is grateful to him for it because his personality is *not* felt behind it. Disagreeable situations are easily repressed thus producing the usual and familiar results. The schizoid is the true psychologist. He can dissect himself and others, because he can strive against his own primitive feelings he acquires the ability to express them in literature and art, or in analyzing others. He is more refined and more differentiating in his expressions than the syntonik, who reacts to the thing as a whole rather than to a small detail of it. The disharmony of schizoids to their environment makes them into reformers, inventors and prophets. We can mention here the genius type whose marked tendency to splitting may finally result in a psychotic condition. Persons of power, rulers, according to Kretschmer and Bleuler, must

be schizoids, "one does not have to feel or even think with others in order to make use of them and dominate them." . . . "The necessary perseverance which enables great men to attain their aim and which in insignificant beings expresses itself in obstinacy and queerness is only afforded by schizoid mechanisms which can block or suppress the contrary strivings of external and internal influences." (Bleuler.)

There is no question that many of our own famous men belong to the schizoid type. Thus we can mention Washington, of whom historians speak as "silent, thoughtful, never disposed to conviviality, perfectly abstracted, his lips moving, no sound was perceptible." (Sullivan and Custis); Madison and Andrew Jackson in whom the schizoid factors predominated, Woodrow Wilson and others, while equally famous men, like Abraham Lincoln¹ and Theodore Roosevelt were preponderatingly syntonic, especially the former. It would seem that some syntonic types exert a greater fascination on the masses, while the mild schizoids play a greater part in the formation of the deeper structures of civilization, children and primitives usually show a preponderatingly syntonic reaction while grown-ups and older races are preponderatingly schizoid. According to Bleuler cultural progress, as far as we know it, comes almost entirely from men. Men as a class have milder syntonic qualities than women, which may also account for the fact that twice as many women suffer from manic-depressive insanity than men. The schizoid components preponderate in men at least relatively.

I regret that I cannot enter here more deeply into the problems brought forth by the stimulating work of Kretschmer, I can only refer the reader to his original work and particularly to Bleuler's very interesting and absorbing formulations of schizoid and syntonic reactions. I shall merely sum up by repeating that while both reactions exist in every person, one or the other predominates. In the so-called normal individual one can clearly observe that all his activities are determined by the predominating reaction; one reacts usually either in a syntonic or schizoid

¹ Although Lincoln had marked manic and melancholic moods he reacted to life in a very schizoid manner. It would be better to call him a schizoid manic.

manner. In predisposed individuals these reactions may become markedly enhanced and then result in a psychosis of either type. The other type of reaction is also present and depending on the degree we speak of a typical schizophrenic, a typical manic, or of mixed types. This explains also why some paretics and seniles act like expansive manics and others like paranoiacs, and why some apparent neurotic changes into a psychotic; it all depends on the degree of the schizoid or syntonetic reactions that they possessed throughout their lives. For even the normals show a distinct way of acting throughout their whole existence which can easily be put into this or that category of reaction. To be sure one occasionally notices that some people react differently at certain periods of life, Kretschmer's "Dominanzwechsels," thus a schizophrenic showing manic and melancholic moods eventually even, after many years, becomes typically schizophrenic. But even in normal persons one often sees a syntonetic changing at puberty to a schizoid or vice versa,* but on the whole one can follow a definite reaction of a preponderating type running throughout life.

It is interesting to see what Bleuler thinks of the psychoneuroses in the light of schizoid and syntonetic reactions. To be sure Kretschmer was the first to assert that syntonety has nothing to do with the neuroses, the symptoms of which have in principle long ago become identified with the mechanisms of schizophrenia. As Bleuler puts it, "The liveliness and lability of the unbridled manic temperament is 'nervousness' only in the vulgar sense but it is not neurotic." That most neurotics are latent schizophrenics was also long known. Bleuler has for some time counted all compulsion neuroses to schizophrenia but thought it remarkable that the usual forms of these neuroses do not merge into dementia. He also states that if you take away from the neuroses what does not belong to them, namely, the tendency to primitive reactions, which is in most cases considered hysterical, and if you put in their places the so-called "neurasthenias," which are really incipient pareses, or cyclic depressions or tubercular or toxic states, the other neuroses are simply manifestations of the

*I have often observed such changes in psychoneurotics which I could easily trace to a change in the identification from one to the other parent.

schizoid mechanisms, viz., of the blocking, splitting, and symbolic expressions of the unconscious activity. To quote Bleuler again "Hysteria is a schizoid reaction in an exalted feeling of self with a manic-like mobility of the affectivity. The manic component is frequently, or perhaps always, based on a hereditary syntonic-submanic type." Bleuler does not state directly that neurasthenia is probably a schizoid reaction in a depressive syntony but puts it in the form of a question. To be sure the schizoid and hysterical reactions were long ago contrasted notably by Jung* who showed the marked resemblance between them, but there is no doubt at all that there is a wide gap between the two modes of reaction. Moreover, when one sees many neurasthenics as I have studied them for a great many years one soon learns that neurasthenia is merely a name. For the last ten years I have rarely diagnosed a case of neurasthenia. I fully agree with Bleuler that practically all the so-called neurasthenias belong elsewhere. There seems to be no such independent disease. Whenever one studied such patients one could easily put them into one of the diseases mentioned above although the morbid picture is undoubtedly schizoid. Since I became acquainted with the opinions of Kretschmer and Bleuler I found that all my psychoneurotics were preponderatingly schizoid. There is no question, however, that a great many of them never go beyond a certain point with their schizoid tendencies. In fact many years of experience with a large number of psychoneurotics taught me to be very guarded in my prognosis. I have met quite a number of cases like those mentioned above, especially compulsive neurotics, who even if they do not become schizophrenic and react well to psychoanalytic treatment always manifest some deep schizoid trends. Of late I have investigated a number of deeper compulsive neurotics whom I had discharged over ten years ago. I found that although their obsessions and phobias never returned they are still not the type that adjust readily. One of them told me that occasionally he imagines that people talk about him although he is absolutely sure that he is mistaken. The milder hysterics and compulsive types unquestionably make excellent recoveries under

* The Psychology of Dementia Præcox, translated by Frederick Peterson and A. A. Brill, Monograph Series, Journal of Nervous and Mental Diseases.

psychoanalytic treatment although they remain schizoid in their reactions.

Psychoanalytically these reactions have not been unknown to us under different names. Thus we have long distinguished transference from narcissistic neuroses, the former include hysteria and compulsion neuroses while the latter refer to the *præcox* and paranoid types. We have always laid great stress on the transference mechanisms and said that in the transference neuroses one soon obtains a positive or negative transference from the patient while in the narcissistic neuroses this is not the case. The narcissistic reaction is nothing but the schizoid of Bleuler and Kretschmer. Translating schizoidism and syntony into Freudian terms we can say that every transference neurotic has also a fragment of narcissistic libido, and depending on the quantity and perhaps quality he is either a frank transference neurotic, a mixed type, or so deeply narcissistic that he cannot be influenced by any treatment. In fact I feel that although the terms given us by Bleuler and Kretschmer have thrown a great deal of light on classification of so-called normals and on the diagnoses and prognoses of neurotics and psychotics, we still have to find why one schizoid reacts as a compulsive neurotic or hysteric and the other as a schizophrenic. Bleuler himself in differentiating between hysteria and schizophrenia calls attention to the fact that in the former there is a co-operation of a "flight into the disease," "morbid gain," and similar mechanisms which one does not find in schizophrenia and wherever such aims co-operate on a schizophrenic basis, as in the Ganser and Buffonery syndroms one does not know whether to call it hysterical or schizophrenic. The concept of "morbid gain" and "flight into the disease" are ideas given to us by Freud and only by studying cases analytically can one hope to come to the nucleus of the questions involved. Indeed a good beginning has already been made by Freud and his pupils.²⁰

²⁰ Freud: Zur Einführung des Narzismus, *Jahrbuch der Psychoanalyse*, Band VI.

NEGATIVE HISTOLOGICAL FINDINGS IN EXPERIMENTAL ORGANIC PROCESSES.*

BY SAMUEL T. ORTON, A. M., M. D., IOWA CITY, IOWA.

In discussing Dunlap's † paper on histological studies of selected cases of dementia præcox at the 1923 meeting of the American Psychiatric Association, I called attention to the fact that obviously organic pathological moments acting on the nervous system do not always leave readily demonstrable structural changes, that we must therefore differentiate clearly between those processes which cause visible alterations in the nerve cells and those which, although still clearly organic in nature, do not result in such alterations and must therefore acknowledge that the absence of clear-cut structural lesions in a given disease by no means excludes an organic etiology.

To further elaborate this point I have assembled the results of a scattered series of experiments begun in 1912 and carried forward at intervals since, all dealing with organic processes in which death ensues during or after striking convulsive attacks which obviously implicate the central nervous system.

The experiments fall into four groups and will be reported here only in skeleton form.

Group I.—Acute cerebral anæmia. These experiments were carried out in the laboratory of the Worcester State Hospital, Massachusetts in 1912 and 1913, and the procedure was the sudden and practically simultaneous ligation of both carotid arteries in the neck. The results of this procedure are not constant probably because of variations in the volume of collateral blood supply from the basilar artery by way of the circle of Willis. In my series of five dogs, three developed convulsions within a very few moments after the ligation. One died in convulsions and

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

† AM. JOUR. PSYCHIAT., III, 3, 1924.

the other two were killed by bleeding as recovery from the convulsions began. This group represents central nervous system death from acute ischaemia which probably operates through oxygen starvation.

Group II.—Tetany parathyreopriva. These experiments were carried out in two series. The first, consisting of three dogs, was done in the Worcester State Hospital in 1913, and the second of five dogs in Prof. Alzheimer's laboratory in Breslau in 1924. Some of these animals were allowed to die from tetany and others were killed by bleeding in various late stages of the disease. The exact mechanism of tetany is unknown, but the process is looked upon as the result of a calcium deficiency.

Group III.—Acute oxalic acid poisoning. This was produced by the injection of a strong aqueous solution of oxalic acid into the venous circulation and the suddenness with which convulsions occur in these animals is startling; often the animal is in convulsions before the needle can be withdrawn from the vein. These experiments were started in Breslau in 1914 as a possible method of control of the calcium deprivation of tetany and were continued in the laboratory of the Pennsylvania Hospital in Philadelphia in 1914 and 1915, and again in the Psychopathic Hospital in Iowa City in 1920.

Rabbits were used in this group and there were 14 animals in all. Here again the mechanism is unknown. All of the soluble oxalates have a high degree of toxicity but we do not know whether the oxalate radical is in itself toxic or whether the toxic effect is due to the formation of insoluble and hence physiologically inert calcium oxalate within the tissues.

Group IV.—Insulin hypoglycaemia. These experiments were carried out in Iowa City in 1923-24, in collaboration with W. V. Cone and O. L. Hoover. The insulin used was supplied for the experiments through the courtesy of the Eli Lilly Company, and a more extended report of this series is in preparation and will be published soon. In this series we attempted to determine the part played by the central nervous system in the convulsions by spinal transection alone, and with spinal pithing with results indicating quite clearly that the convulsions were central in origin. Twenty-one rabbits were used, some were fed during insulin treatment and some were starved. Some received large

doses resulting in acute deaths, while others were given small doses to bring about repeated convulsions. One rabbit was in convulsions every day for ten days and each day was relieved by the administration of glucose. The mechanism of this condition is quite obviously a hypoglycæmia.

In all four groups careful histological examinations were carried out by a fair variety of methods, although in some, especially those done in Alzheimer's laboratory, there was much wider range than in others. The methods used were the original Nissl or Alzheimer's toluidin blue, phosphotungstic acid hematoxylin, eosin and methylene blue, Alzheimer-Mann, Lichtgrun acid fuchsin, Bielchowsky and Herxheimer.

In all groups, variants from that which we have set up as our concept of the *normal* nerve cell were found, but no changes were found which were consistently absent from the control animals, nor which were consistently present in the experimental material, nor which were in harmony with either the severity or duration of the clinical pictures. Dr. Alzheimer who had himself worked with tetany by the earlier methods saw all of my Breslau material and considered the results even by the finer methods to be negative.

All of the experimental conditions reported here are obviously of organic nature and probably center their attacks on the nervous tissues. In our insulin series the chemical estimate of the blood sugar content permitted us to foretell within roughly 12 hours when death would occur, so that this was not only an organic situation but a measurable one and in this series our experiments indicated a nervous origin of the convulsions and would imply a nervous death.

Our histological methods are undergoing constant refinements and improvements and by their aid we are today able to determine many fine structural changes in the nerve cells, but by comparison with the delicacy of the structures under observation even the finest of them must be considered as rather coarse and brutal. Undoubtedly newer and finer methods will be forthcoming and some of these may reveal demonstrable changes in hitherto negative material, but there is probably little hope that technical improvements of an histological nature will ever solve the whole problem. No serious attempt has been made with this material to develop technical methods which might demonstrate

changes, but the procedures applied will compare very favorably with the methods in use for the study of human material from cases of the psychoses. Indeed, because of its freshness this material is superior to all except the most unusual autopsy material.

The modern view of the irritable cell looks upon it as a complex emulsion of protides and lipides presenting at its surface a semi-permeable membrane, *i. e.*, a surface which will permit the penetration of certain substances but will bar the passage of others. Among those which enter freely and which play a large part, not in the building of cell structure but in the maintenance of its function, are the dissociated cations Na and Ca and oxygen and dextrose. Those tissues of the body which deal with metabolism of gross quantities of raw materials as do the digestive, secretory and excretory cells require a very considerable supply of protides and lipides. The nerve cell which deals solely with energy transmission probably requires a much smaller supply of these substances which serve here merely for the replacement of wear and tear. It does however show a great dependence on an abundant supply of dextrose and oxygen for its proper functioning and also probably requires an extremely accurate balance of sodium and calcium salts in the pericellular fluid.

We may therefore tentatively conclude that quite different chemical needs exist for the maintenance of the neurone's structural integrity and for the maintenance of normal function and that it may be structurally sound and yet abnormal in function through disturbances of the latter type of organic factors.

The experiments here reviewed seem to bear out this view. None of them deal directly with the materials needed for structural repair although such experiments are easily devised and have already been projected in my laboratories. Insulin and starvation reduce the dextrose content of the blood and hence of the pericellular fluids; ischæmia may be considered as acting through lowered oxygen tension, although a purer approach to this is obvious and parathyroidectomy and oxalic acid poisoning both probably result in a lowered supply of available calcium.

These experiments indicate however only one phase of the organic possibilities in diseases in which as yet no characteristic histopathology has been demonstrated. There are possible altera-

tions in structure also which may remain undemonstrable by microscopic methods. We know very little concerning the actual chemical nature of the protides and lipides which make up the nerve cell cytoplasm and yet we believe that differences either in chemical constitution or in the proportions of these substances or in the physical characters of the emulsion underly all the wide range of functional differences of various parts of the nervous system. With substances of such complexity it is highly probable that many minor alterations capable of disturbing function might occur before they become sufficiently coarse to register their affect in microscopical alterations. As an example of this type of change the early phases of fatty degeneration may be cited. The fats which appear in the nerve cell in degeneration (in contrast to the infiltration of carotinoid pigments) are probably the result of catabolic alterations of the complex lipides of the cytoplasm. In the normal cell these lipides cannot be selectively demonstrated either because of their very fine state of division in the emulsion or more probably, because of their chemical combination with protides, phosphorus, sulphur, etc. As fatty degeneration begins however, they appear as an extremely fine stippling of stainable particles widespread throughout the cell body and as later stages are encountered the droplets appear progressively larger and with a tendency to gather into infra nuclear collections. Alzheimer reported that the fine particles stained red by his acid fuchsin-light green method antedate the fat stippling in processes which later result in fatty degeneration and he considered these fuchsinophile granules to be precursors (*vorstufen*) of fat thus carrying the demonstration of structural abnormality one step further back. It does not follow, however, that even these earliest steps are coincident with disturbances of function. Indeed it is highly probable that several steps of catabolic disintegration of the complex lipides which might seriously disorder the function of the cell have occurred before reaching this stage of visibility which represents the relatively complete splitting off of the fatty acids and neutral fats from the lipide molecule.

Certain psychoses show such obvious changes by the present methods that we are rather prone to think of these changes as a measure of the organic damage to a brain and in their ab-

sence to conclude that no organic disease was present. For example in Nissl pictures, we are apt to consider that lack of chromolytic, axonal or sclerotic changes indicate normality. This of course is indefensible as their absence simply means that these cells had not suffered from a certain restricted group of pathological moments.

Finally, I think it safe to say that the problem has not yet been exhausted even by the methods available today. This is largely because of the enormous technical difficulties in the way of applying our present methods to a wide enough representation of the various nervous organs which collectively constitute the brain cortex. The general pathologist can usually by means of a comparatively few sections of a given organ reach a fairly safe conclusion as to the structural integrity of the organ as a whole. In the brain, however, where we are dealing with many cortical fields of widely differing function such a conclusion is unsafe. This is beautifully illustrated by the alpha-privative group of selective function disorders—aphasia, alexia, etc. I know, today, for example, of no exhaustive study over a wide range of cortical areas of the intracellular neurofibrils nor of the wealth of interconnections between cells either of which might be carried out by some of the silver impregnation methods such as the Bielchowsky.

RÉSUMÉ.

Experiments are recorded which indicate that certain organic disturbances which probably cause death through their attack on the nervous centers, leave no consistent structural alterations in the nerve cells as studied by the methods usually applied to human material.

Emphasis is laid on the fact that our concept of the organic must be large enough to include many processes which do not result in demonstrable structural lesions and that current negative findings in such a disease as dementia præcox for example should not serve to deter further investigation with the organic approach.

MENTAL EXAMINATIONS OF COLLEGE MEN.*

By MARTIN W. PECK, M. D.,
Boston Psychopathic Hospital.

Physical hygiene, including physical examinations of students, supervision of exercise, and so on, is now an established part of every well-equipped college organization. A similar place is waiting for the application of mental hygiene to student bodies, and there is every evidence to expect a rapid development in this field. Among other things, it will be desirable to supplement the intelligence tests now used extensively by the psychologists with systematic examinations of other and no less important phases of the mental life. This type of personality study of college students is by no means a new activity, and has been carried on in various university centers by both psychiatrists and psychologists. Most of the work, however, has been done with selected material composed of volunteers, of groups taking special psychological courses, and of those who have sought aid on account of nervous symptoms.

During the past two years, in connection with the Department of Hygiene of Harvard University, I have been doing some work which has given opportunity for personality studies of students. Many of the men were unselected, and the great majority were normal, at least to the extent that they had no scholastic difficulty and were not considered by their associates or the college authorities to be suffering from nervousness. In a third of those examined, it was impossible to stretch the field of psychopathology sufficiently to find anything the matter with them at all. While the total number interviewed has not been large, enough has been accomplished to reach some conclusions in regard to methods and possibilities.

The study originated in relation with an undertaking which is being sponsored by the National Research Council through one of its special committees. With the cordial approval of the faculty,

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, June 3, 4, 5, 6, 1924.

the Graduate School of Business Administration, which draws its students from all parts of the country, was selected for the initial investigation. Questionnaire studies made of the whole body of students assembled for the purpose formed the basis of the work, and the material thus gained is in preparation for publication.

As a supplement to the questionnaire investigation, I have spent one afternoon a week at the office of the Department of Hygiene for interviews with individual students. A considerable number of men reported of their own accord in response to a general invitation extended at the mass meetings; others were referred from the department of hygiene, the dean's office, and other sources; in all, 59 men were examined. One group of 20 were wholly unselected, being taken at random as they finished their physical examinations. This unselected group varied in age from 19 to 48, but most of them were in the early twenties. They were somewhat perplexed at the purpose of the interview, and at first were rather on the defensive, but, with one exception, developed coöperation, and spoke with frankness and candor about themselves. These 20 studies offered special and sometimes amusing difficulties. Some of the men were so objective in their viewpoints, and unused to introspection, that they floundered heavily, even when trying to coöperate.

The plan of the interviews was for the examiner to say as little as possible, and let the subject do the talking; which seemed more productive of desired results than to offer a large number of direct questions. An exceedingly intimate glimpse into the personality of another individual can be gained by an hour's conversation of this type, as contrasted with long acquaintanceship on ordinary terms. The method followed was to present a series of topics and induce the men to discuss them. At times it taxed the resources of the examiner to get the conversation under way. The topics were as follows:

- | | |
|--|------------------------------------|
| 1. Physical health. | 8. Ambitions and aspirations. |
| 2. Nervous symptoms. | 9. Habits. |
| 3. Personality as a child. | 10. Characteristic mood. |
| 4. Home life and family relationships. | 11. Religious attitudes. |
| 5. School life. | 12. Political and social theories. |
| 6. College life. | 13. Miscellaneous. |
| 7. Tastes and special interests. | |

A rough attempt was made to classify the men examined, assuming that differences in make-up are something more than individual and must fall into certain groups. Among a number of systems which were available for the purpose, Jung's classification of personality, outlined in his volume on "Psychological Types," was adopted as most useful. Jung divides people into the two basic types of *extravert* and *introvert*, and further subdivides according to the one of several functions—thinking, feeling, intuition and sensation—which they are accustomed to emphasize in their mental adaptations. The whole scheme is of necessity quite arbitrary and readily lends itself to argument and criticism; but, leaving all technical discussion aside, it furnishes some simple truths which can serve in personality description and understanding.

The mental processes of those in attendance at a football game may be used as an illustration of type reaction. The spectator who watches with breathless interest every movement of the players and is quite oblivious of himself, is *extraverting* in the sense in which the term is used by Jung. For the time being, all values to him are in the external world, and his mood rises or falls as his favorite team gains or loses in the contest on the field. Another spectator may view the game with a different interest. He marvels at the perfection of the group activity which has been developed by training. He notes the single-minded absorption of college and community over an event which of itself seems of little moment. He ponders on the meaning of athletic activities in general, and perhaps sees in them a modern expression of that need for struggle developed in the human organism through long epochs of primitive living, when life itself depended upon physical prowess in the face of a hostile environment. The second man is for the time being *introverting*, and values to him are more subjective and less in what is going on in the external world. The thoughts which arise in his own mind rather than the facts of the game itself assume chief importance.

In the normal man, according to Jung, both introversion and extraversion take place freely, varying according to the situation and the needs of the moment; at times interest flowing freely to the outside world, at others reversing its direction and turning inward to the subject's own thoughts and feelings. Mental health and full personality development imply an easy shifting of interest from

things without to things within and back again. In this general direction of interest there is a relative difference in individuals, depending upon whether they make major use of extraversion or introversion in their relation to life, and based upon this distinction there appear two main types of human beings—the *extravert* and the *introvert*. These two groups at their extremes are easily recognizable, but increasingly difficult to distinguish as they approach each other in the intermediate grades. Both types are fundamentally normal, but it is important for the extravert that in the use of his major tendency he should not neglect to develop an appropriate amount of introversion as a balancing factor, and vice versa.

As in the basic mental processes of extraversion and introversion, so with the secondary functions of thinking, feeling, intuition and sensation, it is desirable that while the major tendency be given full chance for development, at the same time the others be accepted and cultivated as important supplements. According to Jung, if the supplementary functions are not given recognition and opportunity, they will find expression at unconscious levels in a primitive and ineffective way, and thus hinder the construction of a well-rounded personality.

Granting that there is value in this scheme of classification, it seems only reasonable that college students should have as much knowledge concerning its application to themselves as can be given them through applied mental hygiene. By such knowledge the danger of one-sided development may be averted; the student may be spared futile attempts to make of himself some other type than the one for which he is constituted, and it should be easier for him to find the particular vocational niche for which he is fitted. It goes without saying that in discussing such matters with the men examined, it is best to speak quite generally, and avoid the use of a rigid or technical terminology.

Students who have undergone a personality study quite naturally desire that the examiner express some opinion concerning them. Any attempt to compare them with others and predict their future would be, of course, wholly undesirable from every point of view. It should be possible, however, to contribute some estimate as to whether their personality is harmonious or one-sided in its development, and to point out defects and the general lines along which they may be overcome. If general balance of mental function,

method of living, and distribution of interest seem satisfactory, it may be so stated, thereby implying that the man shows no outstanding personality maladjustment, but without in any way measuring him with his fellows for better or worse.

CASE HISTORIES.

The following six case histories have been selected to illustrate the problem of personality types among students in health and disease. The facts were obtained from the subjects themselves, without supplementary information other than their medical and scholastic rating. All of the men were students at the business school; were doing well at their work; and but one of them had any important physical complaints.

Cases I and II represent well-balanced personality types—the first an extravert and the second an introvert.

CASE I.—R., aged 24, reported of his own initiative to the psychiatrist, having in view that he might gain some aid in vocational guidance. Physically he was of athletic build and he gave a story of robust health. There were no nervous symptoms. As a child he was active and boisterous. He was born in Norway and his father died when R. was 12 years of age, leaving the family in comfortable financial circumstances. The mother and son were on a good footing and had traveled extensively together. There were three younger children and the family relationships were harmonious throughout. He was educated in the private schools of his country and learned easily, but his main interests were extrascholastic, particularly in athletics. He mixed well with his mates and was prominent in literary organizations. He came to the United States to enter a technical school and graduated as an honor man. He took the work easily and found plenty of time for outside interests, including considerable social activity. His recreational tastes ran to outdoor sports, in which he excelled. Skiing and mountaineering of all sorts were a passion, and much of his spare time was devoted to such pursuits. In collateral reading he chose the better type of fiction and showed considerable intelligent interest in the drama, being a great admirer of his fellow-countryman, Henrik Ibsen. Philosophy and psychology, *per se*, made no appeal to him, and he had small interest in the fine arts. His ambition was directed toward a position of power in the world of finance and business, and the necessary uncertainty connected with this goal was a slightly disturbing element in an otherwise wholly tranquil attitude toward life. He planned to return to his native land, where he could find opportunity for both business success and his favorite outdoor recreations. His mood was characteristically optimistic, his temper well under control, and he was free from sensitiveness. His sex life was without abnormality. Toward things religious and spiritual he had

no intense feeling, but had thought himself into a mechanistic conception of the universe, consistent with firm conviction against immortality. He said he could more easily believe in the supremacy of the sun than of God. In contrast to this dispassionate intellectualism, it was his habit to occasionally attend the Hindu church, ostensibly to enjoy the high cultural level which he felt was there expressed, but very likely finding in the background of mysticism some satisfaction for his inner needs which his own system of philosophy did not furnish. Along social and political lines, his opinions were either unformed or wholly conventional. There was but little day-dreaming, he was not unduly influenced by the opinions of others, and he was confident without being bigoted in regard to his own ability to think things out. He was not given to enthusiasms. In general, he considered himself—and probably correctly—as above the average of the men in his class, but he was in no way snobbish, supercilious or intolerant.

This man was an example of the well-balanced extraverted type, probably using the thinking function predominantly in his mental adjustments, but avoiding most of the difficulties of one-sided development and showing healthy signs of a capacity for introversion and for the use of the secondary functions of feeling intuition, and so on.

CASE II.—H., aged 24, consulted the psychiatrist of his own accord, disclaiming any special problems, but professing an interest in the general subject of personality study. He was well-built and good-looking and was frank and engaging in manner. He described his physical health as fair, but felt he was not inclined to take proper care of himself, in regard to exercise, rest and diet. Except for a tendency to worry when under special stress, there were no nervous symptoms. As a child he was quiet and serious, but looked back upon this period with pleasure and referred to his home life as "very wonderful." His father was a moderately successful New England merchant, and described as of very high character. The mother had been a school-teacher and tutored H. until he entered the fourth grade of public school. She was religious and studious in makeup and hoped that her son would choose the ministry for a career. An older brother, the only other child, was estranged from the parents by a marriage against their wishes. In high school, H. had a good scholastic record, played basket-ball, and was president of the student council and of the senior class. He graduated from a co-educational college, where he was prominent in fraternity life, and was on the track team and glee club. He chose his companions rather carefully from those whom he thought would be an advantage to him, and was popular with the girls. In spite of his apparent success, he expressed but moderate enjoyment over this period of his life. His special tastes and interests tended toward intellectual and cultural things. Two years' work in experimental psychology had given him much satisfaction. He had a passion for music and had studied piano and organ for many years. In reading he had systematically gone through

the Harvard Classics and was intelligently familiar with Freud. Standard fiction, such as Dickens and Hawthorne, appealed to him, and he kept in touch with current events. In looking to the future, his ambition was to gain a position of independence in the business world in the hope that he could then devote himself to teaching economics, feeling convinced that he "could put things across to others." He denied any characteristic mood, saying that he changed from day to day. He was inclined to seriousness, but never had significant depressions. He was not given to enthusiasms. When things went wrong, or he had important problems to decide, he wished to get away by himself and think things out. He was continent sexually, and appeared to have no overt problems in that respect. In regard to his religious life, while spiritual values played an important rôle, he had grown away from the orthodox position of his parents, and felt he could not say the Episcopal Creed without conflict. For his mother's sake, he had continued to live up to the forms of the Church. He said, "I more and more believe that man can be guided by conscience," and gave as an example of this philosophy, that if he felt he had studied enough, he was satisfied, whatever the results might be as to standing in class. No formed opinions were present on social and political matters except that he had progressive views on education. He admitted an inclination to day-dreaming, but the content seemed largely concerned with practical affairs and to be in touch with reality. He was self-confident, and said frankly that he felt he could compete with the ordinary man and come out ahead.

This young man illustrated the well-balanced introvert who approaches life primarily from the standpoint of subjective values, but who has a sufficiently developed use of extraversion to keep him in easy touch with the outside world. He used as his main mental function that of thinking, but not to the exclusion of others which were appropriately secondary and compensatory.

Cases III and IV demonstrate poorly balanced personality types, an extravert and an introvert respectively.

CASE III.—J., aged 23, consulted the physician on his own initiative. He denied any special problems, but was vaguely discontented, and interested in self-knowledge. He was small and spare in build, but well set up, active and animated. In regard to his physical health, he stated that he was "fine, could not be better." As to nervousness, he was bothered by "one little thing," which was an annoying inability to urinate when in the presence of others. He added later, that at times when he thought of embarrassing things there was a peculiar jerking of the arms. He traced this symptom back to a period some years earlier, when for a time he had unpleasant compulsive thoughts of striking old people and babies when he met them on the street. At such times he would jerk his arms to throw off the idea, and this habit had spread to include other things.

As a child he was small and delicate. He early showed mechanical tendencies and dreamed of being an inventor. The father was a successful business man in a small Connecticut town, and to J., "an enigma in many ways." At times he was genial and kind-hearted; at others scathingly sarcastic, so that his son never felt intimate or at ease with him. The mother he described as "congenial, normal and human," and "a person with whom one could talk over anything." There were two younger sisters. In grammar school he stood at the head of his class, but suffered much annoyance from nicknames applied to him by other boys. His high school career was enjoyed keenly, and he referred to it as a "triumph." He was in the dramatic club, popular socially, on the editorial board of the school paper, and president of the debating society. He graduated from a large eastern university with honors, but was not enthusiastic over college life and took no part in outside activities. He felt "fed up" on such things, and preferred reading. He did not mix extensively with others, but made a few intimate friends. His interests were in general quite diversified. He was fond of tennis, golf and bicycling and he read extensively, preferring material which gave practical information. He had a considerable list of books on sociology, anthropology, psychology, and government, which he planned to peruse during vacation. Books, when read, were usually abstracted for future reference. Philosophy and the fine arts made little appeal to him. Socially, he had made it a point to develop systematically the acquaintance of desirable young people of both sexes. As to ambition, there was a single-minded purpose to rise to the head of some big business. His characteristic mood was cheerful and buoyant, with rare periods of depression. His temper was under good control, but insidious in onset. He was a person of enthusiasms, which he felt were usually well sustained. His sex life seemed free from overt conflict of any sort, a period of masturbation bringing no retrospective worry. In religion, what he called "ordinary Christianity" interested him but little. He had developed a rationalistic conception of the universe which he deemed wholly sufficient, and he described a "healthy altruism" in relation to his fellowmen. He stated that his philosophy was one of optimism and prosperity and confessed that it made no provision for disappointments or possible insurmountable obstacles. In social and political matters he was conventional and accepted the *status quo* without questioning. He was not sensitive, denied day-dreaming, and seemed most content when in a state of bustling activity of mind or body. His self-estimate was that he was superior to the average. He had much confidence in his own judgment and took pride in his tendency to figure everything out on a logical basis. His weaknesses he felt were a dilatoriness in certain important matters, and a thoroughness to the point of fussiness in other less important activities.

This man could be classed as an extravert of fair balance, who used the thinking function rather extensively in his mental adaptations. He was of a somewhat hypomanic type and had a categorical mind with a tendency to rigidly classify and label all the

facts of human existence. He had deliberately cultivated these qualities but was finding increasing difficulty in stretching such rigid mental processes to include the growing complexities of his life. A certain uneasiness about the future which lurked behind his self-confidence, his inability to contemplate the possibility of obstacles to his progress, and certain vague obsessive symptoms revealed some inadequacies of personality. The need was evident for supplementing his major function of extraversion by a proper balance of introversion, and to reinforce his thinking activities by an appropriate development of feeling and intuition, which would aid in his mental adjustments when pure thought was insufficient. Cultivation of an interest in poetry and art, a few genuine and spontaneous human relationships, or some contact direct with nature, would be of much value to him. A little real spiritual culture would also aid in the acquirement of a well-rounded personality. As a matter of fact, he was near enough to the normal to predict that he would come out all right anyway in the end, but it is quite possible that a word of guidance at this period in his career might contribute considerably to that result.

CASE IV.—K, aged 22, was referred by Dr. Lee, of the department of hygiene, to whom he had expressed some discontent with himself and his work. He was, however, getting on in his studies passably well and there had been no serious maladjustment of any sort. Physically he was tall and erect, with a rather austere and dreamy expression. He had always been in excellent health. With reference to nervous symptoms, he stated that he took quick likes and dislikes, flared up easily, and was irritable with family and friends. He was brought up in a Massachusetts city in a well-to-do family, which included two older brothers and a younger sister. As a child he fitted in fairly well to the group, but as he grew older he had continual friction with parents and brothers, which he felt was chiefly his own fault. He described his father as narrow and out of sympathy with his own beliefs. He said, "I think that life is something easy which you can breeze through. He sees it more seriously." The mother was religious, with a Puritanical viewpoint, and was troubled because K. was drifting away from such standards. Both parents considered him conceited. In grammar school he was something of a leader and captain of several athletic teams. He stood well in his studies at high school, was on the football squad, wrote some articles for the school paper, and was a member of various committees. He mixed very little socially, and was sensitive about a facial acne which was present at the time. During his college course he obtained good marks, but took part in no athletic or extra-scholastic activities. In his third and fourth years he retired still more,

spent much time in reading, and was bored with student life. Concerning his sex habits, he was frank and quite evidently genuine. He masturbated for a period of four years and had a few heterosexual experiences later. The moral phases of the subject gave him food for thought, he appeared on the whole to have high standards, and there was no evidence of overt conflict of any sort.

His tastes were chiefly along lines of culture and the humanities. A course in ethics while in college had aroused in him considerable interest. English literature and philosophy were also favorite subjects and on the latter he had read widely. In fiction he read what "people said were the best books"; Thackeray and Balzac were his favorite authors. He had tried piano lessons for a period and also done some composing, but this activity was dropped as soon as the study became irksome. He expressed considerable enthusiasm over the drama, and had a persistent but half-hearted desire to be an actor or a producer, although he had made no move to test himself out in amateur productions. He talked of his liking for travel and observation, and commented that one important advantage of commuting to college was the opportunity given to watch people in the subways. He had the greatest aversion for any sort of work with his hands. He admitted little interest in business and had come to the school chiefly to please his father. He accepted the fact that he would have to take some business position for lack of an alternative. He felt that some variety of social service work, or some sort of constructive approach to the labor problem would be agreeable to him as a vocation; but he smilingly told that his mother contrasted these aims with his unwillingness to put himself out in the slightest degree for children or others who were invited to the house. He had thought of a political career, with the slogan "State for people *vs.* People for state." He admitted to a moody make-up, with rare periods when he was gay and jovial. At home he was considered gloomy and often called a "bear." Late meals and other minor annoyances upset him tremendously. He did not think he was morbidly sensitive. In regard to religion, he had professed an orthodox faith without special question, but for the past few years he had begun to doubt, although felt that the whole matter meant little to him. Along social lines he had a few definite but unwieldy ideas. He considered that business organization had been largely overdone, and that the Eastern philosophies, with their championship of leisure and meditation, could well be used to reconstruct the viewpoints of industrial civilization. Patriotism to him was pure "bunk" and he had a friendly attitude to internationalism. Day-dreaming of an immature nature was indulged in freely and dealt with athletic prowess and beautiful maidens. His self-estimate in many ways was high, and he was frank to admit that he had always felt rather above his associates, due, chiefly, to his superior interests and ideals along cultural, religious and social lines. In contrast to these statements, he showed marked lack of self-confidence in other ways, and his attitude toward his own abilities was more judicial than conceited. He said, "I have always felt that I was

going to amount to something sometime, so need not worry." He was perfectly willing to admit that there was little in his record of accomplishment to bear out his superiority, and that he might be misinformed about himself.

This man showed an over-balanced introversion which had carried him away from effective contact with the outer world. He was rich in vague philosophies of life, but poor in genuine accomplishment of any kind. He over-estimated himself as to the worth of his ideals and capacities, but at the same time lacked the confidence to undertake practical affairs. In the real test of living, including home, social and vocational adjustments, he was profoundly lacking. He was seclusive, detached and irritable, and showed little initiative in working toward any concrete goal. The picture seemed one of general inadequacy, with various compensatory activities, largely futile in character. It needed but a progressive development of these traits to result in a problem of major psychiatric importance. Appropriate medical management would mean a development of extraverted activity by both re-education and practical direction. More direct contact with his fellows and work with his hands would seem to offer two appropriate methods. The possibility of some discord in his deeper mental life, which only analysis would reveal, remained an open question.

He was seen again a year later, and appeared to be adjusting better in every way. He looked forward with less reluctance to a business career and expressed some real interest in advertising. His father had given him an automobile, which resulted in an increased popularity with his classmates and girl friends. He was less critical of the general social order, and smilingly admitted that he feared he might come to accept conventional views on such matters.

Cases V and VI describe an extravert and an introvert, each suffering from a neurosis.

CASE V.—(Fear of fainting.) B., a married man of 32, requested an interview with the physician on account of a claustrophobia and a fear of fainting, which had been present since high school days, and which he felt stood as a persistent obstacle to his happiness and success. The ostensible cause for his phobia was a series of fainting attacks from the ages of 13 to 18, four in all, and each time resulting from the sight or narration of an injury associated with bloodshed. On one occasion he was at a formal dinner, when a lady present described an automobile accident, and he dropped to the floor in a faint. The last time was when on a high-school picnic he

cut his hand on a pop-bottle and fainted while stopping the blood. Each time his unconsciousness was but momentary. Following the attack, he felt markedly humiliated, and came to himself "ready to fight" anybody who made any comment. His mother told him she had cut herself with a knife during pregnancy and he wondered whether he had been "marked." His distress in relation to tales of tragedy or accident persisted, but he never fainted again. In college classroom, the reading of "Macbeth" was most difficult for him to endure, while such accounts in history-lectures as bloody footprints left by an army crossing the Alps were almost unbearable. He left college at the end of his sophomore year chiefly, as he claimed, to avoid such situations and gave up the study of law for similar reasons. When the United States entered the war in 1917, he was eager to serve, but feared the disgrace of collapsing before his mates during some crisis. He therefore decided on the air service, feeling that he would be much alone flying through the air, and if he failed at a crisis, nobody would know it. He passed a high examination and was commissioned. For two years he served in various capacities, although he did little flying. At one time he was assigned to a hospital and his work brought him into intimate contact with the dead bodies of influenza victims. He got through without difficulty, much to his own surprise. In civil life his first thought was to manage his social and business activities so as to avoid being in a hall without ready means of exit. This was often accomplished only at great inconvenience. In the business school it had not been easy to arrange such safeguards, and he was finding difficulty in carrying on.

Physically he was of athletic build and had always excellent health. He was an easy talker, made a good appearance, and was frank and confident in manner. Aside from his phobias, he had no nervous symptoms. He was brought up in the South, the only child of rather prosaic and simple parents, with whom he had little in common as he grew older. His childhood was happy, and he was neither indulged nor repressed. In school and college he was a leader, excelled in athletics, and was popular socially. His tastes tended to outdoor things and to practical affairs of business and home activity, with little interest in purely intellectual pursuits. His overt sex history had been normal and without conflict. Married life had been unusually happy and there were two healthy children. He had been uniformly successful in business, among other ventures, working as real estate agent and automobile salesman. His ambition was to become an authority in advertising and salesmanship with a view to teaching in a technical school. He had every confidence in his ability to reach this goal, provided his phobias did not prevent. In regard to mood, he was uniformly cheerful and optimistic, and a fiery temper had been brought well under control. In his religious life, he had retained the formal doctrine of his early years, and daily prayers were carried on. He had "a strong belief in a powerful Being, somewhere, that guides the destinies of man." Discussion of the Crucifixion was so unpleasant that he avoided church partly on that account. He seriously felt that his best chance of getting rid of his symptoms was to develop his religious life to the extent of gaining a faith which would

drive out all fear. An interesting point in regard to one factor in his neurosis was, that during his physical examination by the department of hygiene, some vasomotor instability was noted, and the examiner inquired if he fainted easily. This question alarmed him, and reinforced the decision already made to consult the psychiatrist.

During several interviews little was brought out in the history that had direct bearing on his neurosis. There were some instances narrated which implied a tumultuous emotional makeup. As a child he fought vigorously against medical attention. Later, when taking gas for a tooth extraction, he dreamed he was fighting the Germans and attacked the dentist. He had occasional anxiety dreams of walking on daggers. There were some episodes of cruelty to animals in childhood. There was not opportunity to see him for any detailed medical study, but the general subject of phobias and their genesis was discussed with him. The opportunity for talking over his troubles and the new viewpoints which he was enabled to bring to bear upon them seemed to do him much good.

Five months later he reported that he was having less difficulty than for many years, and was for the first time hopeful of getting rid of his symptoms entirely. When seen a year later, he was somewhat less optimistic. In spite of an excellent scholastic record and freedom from acute fears during the intervals, he felt that the old trouble was hovering in the background, and sooner or later he would be forced into positions where it would reappear.

This man, according to the Jung terminology, would be classed as a feeling extravert. Encouragement of an introverted attitude as a balancing factor in his personality, with an increased development of the thinking function, would be a general indication in his case. A systematic personality analysis would no doubt be necessary to get at the real basis of his phobias, and he was advised to undertake such procedure should he have trouble in the future and be unable to handle the matter by himself.

CASE VI.—(Self-consciousness and dyspepsia.) C., aged 25, was seen in routine examination. He was troubled with diffidence, was over-serious-minded and suffered from chronic dyspepsia and constipation, associated with mental depression. He appeared glad of the opportunity to talk over his difficulties. Competent studies by internists had disclosed no organic basis for the indigestion. The symptoms were so persistent, however, that his whole physical and mental life were adjusted around his gastro-intestinal function. He had made extensive experiments in diet and had developed some rather freakish habits in regard to amount and kind of food without in any way improving his condition. Physically he was tall and undernourished, and carried himself poorly. The family home was in a small New England town. The father was of Puritanical makeup and strict in discipline. C. felt that he was in many ways more like the father than

were his brother or sisters. The mother was cheerful and easy-going, and more intimate with the children. As a child he was retiring and bookish. In preparatory school he found it difficult to mix socially, and was painfully self-conscious, but at the same time was something of a leader in various organized activities. He made himself unpopular with the student body by taking a leading part in the movement by a religious organization to curb the activities of some of the rougher element in the school. During his college career he was active in fraternity and dramatic affairs, but had little social life and few intimate friends. He was forced to stay out for a year on account of a breakdown, in which the mental symptoms of depression and sensitiveness shared the field with indigestion and a functional eye trouble.

His interests were wholly of a serious nature and his outlook on life strongly altruistic. Biology, mineralogy, history and the fine arts all had been cultivated. The collecting instinct had been actively present since early boyhood. In philosophy he had little interest, and his contact with psychology had been a casual attention to the dramatic side of psychical research. Religion of a sternly orthodox kind meant much to him and he had ambitions for the ministry which were given up on account of self-consciousness and lack of confidence in himself mentally and physically. Some sort of service to humanity in missionary or other fields remained a dominant motive. He said, "I always thought it did not matter much about myself if I could help others." He admitted that some desire for power and leadership might have a part in his aspirations. He turned to the business school somewhat reluctantly with the hope of preparing himself for some useful field. He did not day-dream and was not given to enthusiasms. He was sensitive and morbidly influenced by what other people thought about him. If criticized, all initiative was crushed, while if approved, he was spurred to high endeavor. His own self-estimate appeared to be that he was quite capable in every way if he could acquire appropriate assurance and confidence.

Manifestly, this man needed some aid from the medical profession other than to be told that nothing important was the matter with him. The atonic indigestion, whatever the cause, should be influenced by general physical hygiene. A personality study should aid him greatly in self-understanding and self-control. It is quite likely that he would find some of his strivings for service and reform in social and religious fields were compensations for defects in his own makeup which were thwarting his capacities for satisfaction along more usual channels. It is certain that all ends would best be served by enabling him to set his own house in order before he undertook to mould the habitations of his neighbors.

The man was quite evidently an introvert and indication for the development of extraverted qualities was clear. He needed more

friendly contacts with people and to lose himself in wholesome relationships to the external world. He was not seen from the time of the original examination until he reported two years later in response to the request of the examiner. On the whole, time had dealt kindly with him. He had done well enough with his school work and had gained a real interest in it, while physically he was much improved. His religious and social views had liberalized, and he was less concerned in reforming the world. To offset these signs of better adjustment, a curious development in his sex life had taken place. For six months he had been masturbating, which was his first experience with the habit, and he reacted to the resulting conflict with both fear and remorse. It was fairly simple to interpret these difficulties and to give him some constructive advice. It appeared that his former ethical and religious standards had controlled his sex life, so to speak, from above; and he had avoided the necessity for meeting such problems on their own level, which was the only way to make a real adjustment. As his views liberalized and standards changed, the old checks were removed, and he found himself facing the sex impulses with adolescent rather than adult equipment, and immature behavior resulted. It seems wholly evident that some simple mental hygiene in early college years would have done much in this case to smooth a path which was bound to be a difficult one at the best for a man of this makeup.

SUMMARY OF RESULTS.

Conclusions reached from such examinations as have been outlined may be too impressionistic to have important statistical value, but they are presented for what they are worth as a contribution to college mental hygiene.

The group of 20 unselected men from a total class enrollment in the business school of 250, is too small for generalization, and yet when recognizing that it sampled a body of men preparing for places of business responsibility, the results are significant. The 20 individuals divided as follows:

Normal personalities	13
Definite neuroses	2
Minor personality disorders	5

As might be expected in a business school, extraverts, predominated. Of the thirteen normal men, ten were extraverts, two were

introverts and one was unclassified. Both men with neuroses were introverts. One was depressed, shy and hypochondriacal, with marked feelings of inferiority interfering with his work and pleasure. (See Case History VI.) The other was weighed down by a morbid grief over his mother's death which had taken place two years before, and which still absorbed much of his thought and interest. He also had a sense of guilt in connection with this death, wholly unwarranted in fact, but which had persisted in spite of all argument and persuasion. He appeared quite unable to break away from the childhood emotional bondage. Psychotherapy in the nature of analytical re-education was carried on for a period of months with resulting development of insight and moderation of symptoms. Seen a year later, this man showed satisfactory improvement in every way. His scholastic work had been of high character and he was selected by the faculty for special honor.

Of those with minor personality disorders, three could be called extraverts, one an introvert, and one was unclassified. None of these were sick men, but all of them were somewhat outside the limits of wholly well-organized personalities. One had an exaggerated self-consciousness, with a strong feeling of inferiority, and had undertaken various compensatory measures in the way of public speaking, and so on. A second mixed a certain pretentiousness with marked shyness, stood disappointments badly, and reacted in an exaggerated way to worries. The third was a sublime egotist. The fourth showed extreme and painful embarrassment during the interview, of a type which led the examiner to consider a possible sexual abnormality which the man feared might be revealed. The fifth had a single-minded devotion to business success to the exclusion of all other phases of life, including love and recreation; a concentration of interest so intense as to hint at pathological motivation.

Of the 39 additional men examined, 23 were from the business school and 16 from other departments of the university; 21 reported of their own volition, and 18 were referred. Nine of the number were wholly normal, nine had minor personality defects, 18 had definite neuroses, and three were psychotic. Twenty of the 39 were grouped as extraverts, nine as introverts, and 10 were unclassified. Among the 18 with neuroses, there were eight extra-

verts, four introverts, and six unclassified. Only five of this neurotic group complained of physical symptoms.

Of all the 59 men examined, 20 admitted some overt sex problem, although many were of a minor order and by no means always associated with neurotic manifestations.

In addition to the routine mental examination, psychotherapy was undertaken intensively in four cases suffering from neuroses and carried out briefly in seven others. Two men are still under treatment.

CONCLUSIONS.

The following impressions were gained from the work which has been described, though it should be noted that most of it was done with men over 22 years of age, and it is possible that undergraduates would be less interested and coöperative.

1. Routine mental examinations can be advantageously applied to college students as a supplement to other medical and psychological studies. Such examinations should cover at least an hour, with extra time given to men in special need.

2. Examinations of this nature should contribute something worth while to nearly every man, and in conditions of faulty mental hygiene and the minor neuroses, there may be results of great value from both prophylactic and therapeutic standpoints.

3. The proportion of college students suffering from personality disorders and functional nervous illness is large.

4. These conditions appear to bear little relation to general physical health.

5. The majority of students are interested in self-study and self-understanding and will give kindly reception to intelligent teaching along such lines.

6. A considerable number of men, if given opportunity, will come forward voluntarily to discuss their problems.



DEMENTIA PRECOX AS A TYPE OF HEREDITARY DEGENERATION.*

By LELAND B. ALFORD, M. D., SAINT LOUIS.

A moment's reflection is sufficient to demonstrate that our present ideas of the cause or causes of insanity are in a state of greatest confusion. No stronger proof of this fact, especially in relation to dementia precox, the most important type of insanity, is to be found than that contained in the proceedings of the American Psychiatric Association of the last few years:¹ For instance, at the present session we are presented with the therapeutic results of the injection of horse serum into the spinal canal, a method of treatment that leads one to infer that the investigator sees the etiological factor in some toxic or infectious process. In 1922 Cotton vehemently defended his focal infection hypothesis, but a year ago Kirby and his co-workers offered strong evidence against his findings. In 1921 organic visceral disorders of which tuberculosis was named as one were supported by McCarthy and in the same year McDougall, accepting Mott's notion of a degeneration of nervous tissues, advanced the theory that these may be of psychogenic origin. In 1920 Raphael published some observations on vegetative functions while Gurd, as Rawlings had done the year before, described certain organic brain alterations. In 1923 Dunlap found the precox cortex, if anything, superior to the normal. Osnato, in 1918, reminded us that the possibility of a purely psychic disturbance should not be overlooked. To penetrate no further into the past and to wander no farther than our own Association, we are thus able to find striking proof of the chaotic state of our knowledge of the causes of constitutional mental disease.

It is scarcely necessary to add that while this state of affairs persists there can be no hope of preventive or therapeutic measures that are likely to accomplish anything. Obviously there is urgent need of an analysis that accords sufficiently well with the facts to

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

bring some sort of unity to the view of psychiatrists and if the present one serves this purpose in some measure, even though it does not fulfil all the requirements of scientific standards, it will be regarded as amply justified.

A survey of the several theories just mentioned quickly brings the conviction that whatever evidence is offered in support of them, they are in reality based on analogy, that is, on points of similarity which the authors see between dementia precox and better known disease processes. In this respect the view herein supported is no better and no worse than these others; it is frankly one based on analogy.³ Its novelty consists in the fact that it directs attention to a group of nervous affections that have hitherto received too little attention, particularly in their relation to mental disease—namely, the *hereditary degenerations* or *abiotrophies*. The cause of this neglect undoubtedly lies partly in the manner of classification of nervous diseases which is followed in text-books and in the division of disorders among medical specialties, the result being that investigators rarely appreciate the number of types of hereditary degeneration—or of conditions that closely resemble them—nor do they sufficiently accredit their significance. In comparatively few contributions to periodicals, and these almost wholly in German, are they brought together and considered as a group in a way which demonstrates that instead of consisting of a few esoteric muscular atrophies they include some of the most familiar conditions.³

The term hereditary degeneration is explanatory of the pathological process which is at work. On the basis of innate weakness certain nervous (or other) structures melt away, as it were, at a premature age as structures in general do in old age. Gowers expressed the idea very forcibly by his term *abiotrophy*.⁴ Apparently a sufficient cause exists in the inherited inadequacy but no doubt other factors, as infection, may serve to hasten the onset of the process or even, when the weakness alone is insufficient, to initiate it.

THE HEREDITARY DEGENERATIONS.

A given condition is classified as a hereditary degeneration chiefly on the evidence of familial occurrence and progressive course, together with the absence of characters belonging to other

processes. There could hardly be more exact criteria where, as is often the case with these conditions, cases are relatively so rare, opportunity for pathological study so infrequent, pathology so difficult to establish, familial histories so inaccurate and heredity so fitful in its manifestation. In view of these handicaps it is not surprising that doubt should often exist, first, as to the nature of certain conditions, and, again, whether they are entities or merely sub-types. Despite all tentative judgments, however, we have a sufficient number of degenerations about which no reasonable doubt can exist to establish the validity of our comparison with dementia precox.

The following list is, therefore, to some extent a tentative one. It is by no means complete, those included being selected with an eye to showing the number of different types and the diversity of affected functions. To this same end some are included that probably, or certainly, have no connection with the nervous system: *

- Family amaurotic idiocy.
- Progressive infantile cerebral diplegia.
- Dystonia musculorum deformans.
- Pseudosclerosis.
- Progressive cerebellar degeneration.⁵
- Thomsen's disease.
- Hereditary essential tremor.⁶
- Family periodic paralysis.
- Paramyoclonus multiplex.
- Progressive myoclonus epilepsy.⁷
- Huntington's chorea.
- Ataxia of Friedreich and Marie.
- Progressive bulbar palsy.
- Progressive muscular atrophy.
- Progressive muscular dystrophy.
- Amyotrophic lateral sclerosis.
- Myotonia atrophica.
- Hereditary spastic spinal paralysis.
- Familial posterior column degeneration.⁸
- Neural muscular atrophy.

*The bibliographic references are not intended to be complete but cite only articles covering facts not ordinarily found in text-books, or for some reason especially noteworthy. A majority of the conditions are treated in one or another of the systems of medicine, Osler's, Albutt's, Nelson's or the Oxford, or in Jelliffe & White's text on neurology. A great many valuable contributions are found in the well-known German periodicals, especially these of the last decade.

Progressive interstitial hypertrophic neuritis.
 Dupuytren's contracture.
 Milroy's disease.
 Adiposis dolorosa.*
 Tic doloieux.
 Spasmodic torticollis.

(Of the eye) :³⁰

Hereditary post natal cataract.
 Hereditary ocular palsies.
 Retinitis pigmentosa.
 Familial symmetrical pigmentary macular degeneration.
 Hereditary optic atrophy.
 Doyne's family choroiditis.
 Hereditary corneal degeneration.
 Hereditary nystagmus.³¹

Otosclerosis.³²

Chronic adhesive otitis media.³³

Referring to the types affecting the nervous system, observation discloses that in each instance the attack of the pathological process is centered on certain structures although in a lesser degree very widespread in its action. Just what determines the limits of the main destruction it not clear, although the possible importance of a now unrecognized division of the nervous system into units of a biological and physiological nature as suggested by Gray³⁴ should not be ignored. In any case the attack seems always to be limited by function rather than structure. In progressive muscular atrophy, for instance, lower motor neurones scattered entirely along the cord and into the bulb undergo destruction without nearby structures being affected. The same rule holds, to all appearances, for all types. A glance discloses the large number of different nervous functions affected, as lower motor neurone, upper motor neurone, extra pyramidal motor, visual, auditory, cutaneous sensibility, etc.

As regards histological evidence of changes, even where there has been opportunity for investigation, alterations are often slight and uncertain when seen under the microscope. In general when the cord or nerves are the seat of the process, pathological changes are definite, while these are found to be obscure where higher levels are presumably involved, *e. g.*, in Huntington's chorea. This difference is plausibly accounted for by assuming that in the latter

case the structures concerned in the functions which are attacked are so scattered or else the changes are so slight as not to be brought out by available technical methods.

Transmission is true to type in a great majority of cases, if not invariably so. Instances of mutation are reported but are too few to eliminate the possibility of an error in diagnosis or the co-existence in one stock of two distinct conditions. However the possibility of such alteration should not be dismissed, and, if it occurs, will be of the greatest service in determining the origin of types and of apparently spontaneous cases.

The greatest objection to erecting a group of hereditary degenerations will arise from the problem in heredity of manifest and latent traits. The present writer is not competent to enter into an extended discussion of heredity, but may state that transmission of traits by unaffected carriers is well established, although perhaps it is not decided just how far we may go in assuming the existence of latency. The doubt arises whether we can conclude from undoubted familial occurrence in a small percentage that all cases arise on the basis of innate weakness. Is progressive muscular atrophy, for instance, to be accepted as an abiotrophy? We shall not attempt to answer the question; but we do affirm that the large number of conditions that are in rare instances familial and their similarity to definitely hereditary affections justify their tentative inclusion in a group such as the one above.

DEMENTIA PRECOX AS ONE OF THE GROUP.

The belief that *dementia precox* has its basis in organic changes receives support from several of its characteristics. It arises in individuals often quite normal beforehand, usually pursues a progressive course and if remissions occur, however complete they may be, always leave a defect noticeable to intimates and the trained observer with sufficient opportunity for study. In the words of Kraepelin: "By these considerations dementia precox comes nearer to epilepsy; in it also besides the undeniable importance of inherited or early acquired constitution we have cause to assume the development of definite destructive morbid processes progressing either somewhat slowly or rather rapidly which sometimes reach back into childhood, sometimes begin or at least experi-

ence an exacerbation about the time of sexual maturity." " These peculiarities appear inconsistent with any but an organic process.

Some have assumed with a show of justification that the appearance of progression is a psychic phenomenon; but let us turn to other comparisons. Huntington's chorea, where the motor component establishes an organic process, has a similarly progressive psychic deterioration, while in psychoneuroses, psychopathic personality and mental deficiency which should bring equally severe mental conflicts, no such increase is evident.

Once we consider dementia precox to be organic, the weight of evidence both negative and positive throws it into the group of hereditary degenerations rather than suggesting any other disease process that can be mentioned, such as infection, endocrine disturbance, or psychic conflict. The high percentage of direct heredity and the progressive course together with the absence of clinical and anatomical features suggesting other processes are quite conclusive. We may assume that as in Huntington's chorea the particular structures that suffer destruction although here having no detectible sensory or motor function are important in mental activity. In neither condition, perhaps for reasons that have already been mentioned, can the pathological changes be demonstrated, but must await further development of technical methods.

The symptoms which are to be regarded as important are not the dramatic hallucinations, delusions, states of excitement and stupor, stereotypy, etc., which really have a compensatory function, but the "fundamental disorders" (Kraepelin) that appear naked in dementia simplex and terminal weakmindedness such as the weakening of judgment and initiative, the dulling of emotional interest, the loss of energy and the loosening of inner psychic unity. It is in these latter phenomena that progressive deterioration is seen. In dementia precox they are the evidences of the structural degenerative process as in Huntington's chorea are the choreic movements and the mental changes, in essential tremor the tremors, in Friedreich's ataxia the incoordination and spasticity, and so forth.

One must regard mental life in a sense as existing apart from the physical basis. It has its own laws and follows them or attempts to, even in the presence of structural injury. Sometimes it succeeds in dementia precox and we have the remission with defect, but

such success is always a perilous one and liable to change either slight or great, brief or long, at every physical or mental stress. Ultimately of course, if the patient lives to old age, a serious and permanent disruption of the mental mechanism is pretty sure to occur.

PSYCHOPATHIC DISTURBANCES IN THE HEREDITARY DEGENERATIONS.

A remarkable fact in regard to the conditions enumerated in the foregoing list that may here be mentioned is that in almost every one neurosis, mental deterioration, epilepsy or psychosis are sometimes described as occurring.

THE FIELD FOR RESEARCH.

To resume, it is the conclusion that dementia precox is one of the group of hereditary degenerations, in which the degenerative process strikes a set of structures concerned in some unitary functional activity as in all the other members of the group, but with the difference that in this instance the function happens to be particularly important in mental life.

This theory once stated the question naturally arises as to the manner in which further supporting evidence may be produced and what new lines are opened for investigation.

From *histological studies* not much is to be expected if experience with Huntington's chorea is of any value in reaching a decision. For here we have a motor disturbance which points to the corpus striatum as the site of at least a part of the destruction and yet no definite pathology has been discovered. If methods fail where the location of the trouble is so clearly indicated, little can be expected from them in dementia precox which has no characteristic that points to a particular place as the site of the process.

The field of *heredity* appears to be more promising. We already know that direct heredity is demonstrable in a high percentage of cases and we have one or two very complete family studies.¹⁵ Further study should be given those cases that are not patently hereditary to determine the completeness of the negative evidence, to discover any differences in symptomatology and to find another cause than heredity if such exists. In this connection the recent finding¹⁶ that an acquired trait may be transmitted is especially

pertinent. Such investigations on dementia precox should be carried on with the analogy to the other hereditary degenerations in mind.

SUMMARY.

The advisability of studying dementia precox in relation to other nervous disorders is emphasized. When so considered dementia precox by virtue of its hereditary nature and progressive course is found to resemble most closely the hereditary degenerations or abiotrophies. If collected into a group and these conditions and others which closely resemble them although not definitely shown to be of the same nature, are found to comprise perhaps fifty distinct nervous disorders, which attack many different nervous functions producing a variety of motor sensory and mental disturbances. The pathology of dementia precox is best explained by considering it to be one of this group—one in which the affected structures happen to be particularly important in mental activity. The logical field for further investigation appears to be that of heredity.

BIBLIOGRAPHY.

1. Am. J. Psychiat. (formerly Am. J. Insan.) for the years 1918-24.
2. Mollweide, Ztschr. f. d. ges. Neurol. u. Psychiat., 1912, IX, 62, and 1914, XXII, 594.
3. Bielschowsky, J. f. Psychiat. u. Neurol., 1918, XXIV, 48. Schaffer, Schweiz. Arch. f. Neurol. u. Psychiat., 1920, VII, 193. Bing, Ergebn. d. inner Med. u. Kinderh., 1909, IV, 82. Higier, Arch. f. Psychiat., 1911, XLVIII, 41.
4. Gowers. Lancet, 1902, I, 1003 and 1908, II, 1506.
5. Holmes, Brain, 1907, XXX, 466.
6. Flateau, Arch. f. Psychiat., 1908, XLIV, 306. Hunt, Brain, 1917, XL, 58.
7. Lundborg, Ztschr. f. d. ges. Neurol. u. Psychiat., 1912, IX, 353.
8. Bruggendieck, Arch. f. Psychiat., 1922, LXVI, 728.
9. Nolle, Ztschr. f. d. ges. Neurol. u. Psychiat., 1922, LXXVII, 233.
10. Collins, (Hereditary Ocular Degeneration, Ophthalmic Abiotrophis) Tr. Am. Ophth. Soc., Washington, 1922, 103.
11. Am. Ency. Ophth., Article, "Nystagmus," XI, 8398.
12. Gray, Otosclerosis, London, 1919.
13. Politzer, Diseases of the Ear, 1883.
14. Kraepelin, Dementia Precox and Paraphrenia. Translation by Barclay, Edinburgh, 1919, 245.
15. Woods. Heredity in Royalty. New York, 1906, and Minkowski, F. & E. Schweiz. Arch. f. Neurol. u. Psychiat., 1923, XII, 47.
16. Guyer and Smith. J. Exp. Zool., 1920, XXXI, 171. Bagg & Little, Am. J. Anat., 1924, XXXIII, 119.

EPIDEMIC ENCEPHALITIS.

FOUR CASES COMPLICATED BY PREGNANCY AND A PRELIMINARY REPORT OF EXPERIMENTAL THERAPY BY INTRAVENOUS INJECTIONS OF ACRIFLAVINE.*

By EDWARD A. STRECKER, M. D., AND GORDON F. WILLEY, M. D.,
PHILADELPHIA.

As might have been expected, the several epidemics of encephalitis together with the increasing number of protean and disastrous sequels, both physical and mental, constituted a direct stimulus to therapeutic endeavor. A plan of symptomatic treatment was rapidly devised to meet the exigencies of the situation. This was not particularly difficult, since it could draw on the body of knowledge previously acquired from the management of somewhat similar acute, inflammatory central nervous infections, and the neurological damage which they left in their wake. For the acute phase of the illness, such measures as rest in bed, good nursing, supervision of nourishment, control of fluid intake, warm baths, hot packs, hypnotic drug medication, etc., were emphasized; for the stage of sequels, the usual reconstructive resources of medical practice, such as massage, hydrotherapy and passive motion were advocated.¹ The employment of routine spinal fluid drainage was one of the first efforts to influence more directly the seat of the infection. Its results were somewhat disappointing; and, further, there was some question as to whether it was an entirely harmless procedure. Spiller² felt that there was some danger of dissemination of the virus. A survey of the literature, dealing with the attempts to develop specific therapy, notes many brilliant contributions, but its very voluminousness, the wide divergence of opinion expressed and the variety of therapeutic agents employed, indicates only too clearly that the *real specific* has eluded discovery.

* From the Pennsylvania Hospital, Department for Mental and Nervous Diseases, Philadelphia. Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

Practically every avenue of entrance into the body has been utilized, but chiefly the intravenous and intra-spinous routes. The following substances have been experimentally employed with more or less success: sodium salicylate,³ sodium iodide,⁴ sodium nucleinate,⁵ casein,⁶ urotropin,⁷ colloidal gold,⁸ mercury,⁹ mercurial ointment combined with non-specific protein,¹⁰ arsphenamine, neo-arsphenamine, silver arsphenamine,¹¹ diphtheria antitoxin,¹² typhoid vaccine,¹³ influenza b. antigen,¹⁴ auto-serum,¹⁵ the serum of convalescent patients,¹⁶ horse serum,¹⁷ a specific serum from streptococcus strains obtained from the tonsils, teeth and nasopharynx of those suffering from the disease,¹⁸ hypertonic salt solution,¹⁹ etc.

NEUTRAL ACRIFLAVINE THERAPY—CHEMOTHERAPY.

This paper is a brief report of the treatment of 14 patients with sequels of encephalitis epidemica by the intravenous injections of neutral acriflavine. It should be stated at once, that our results were not brilliant, nor specific, though they were promising and perhaps they may stimulate further investigation.

Acriflavine, or trypaflavine as it is known in Germany, is one of the products of Ehrlich's extensive researches in chemotherapy. It will be clear, that for chemotherapy to attain its therapeutic objective, it must not only be toxic to the infection organism or pathogen, but must also be neutral or non-toxic to the host. Furthermore, it is highly desirable that the substance used should have the property of re-inforcing and stimulating the protective mechanism of the body. Chemotherapy is therefore postulated upon the existence of essential and basic differences in the reaction and function, or in chemical or physical characteristics inherent in individual cells even though they appear similar in form and structure.

A second, but scarcely less important, requisite is that the therapeutic agent must penetrate and be diffused through the tissues of the body in which the infecting organism or pathology is located. Encouraged by the greater relative amount of stainable material and facilitated staining reactions of many pathogenic organisms as compared with body cells and from the visibility of the end result, Ehrlich undertook a study of the dye stuffs.

NEUTRAL ACRIFLAVINE.

Among the aniline dyes which Ehrlich and Benda tested out in sequence was the 3-6 Diamino—10 Methyl Acridinum Chloride Hydrochloride. They named this substance acriflavine. On account of the adsorbed hydrochloride molecule it proved irritating. Its activity against bacteria was very slightly decreased by admixture of serum and in useful concentration it has but little inhibitory action upon phagocytosis. In 1912, Browning proposed the use of this compound in bacterial infection and K. Bohland²⁰ utilized it with benefit in infections with *b. coli*, *b. influenza* and in rheumatism. Neutral acriflavine is the successful result of the effort of Benda to eliminate the acid radical and to render the drug less irritating.

CLINICAL AND ANIMAL EXPERIMENTATION.

Buss,²¹ chief of St. Joseph's Stift, Bremen, attracted by the facility of its intravenous use as well as by its parisitotropic properties, used neutral acriflavine in a series of eight women acutely ill with epidemic encephalitis and in one parkinsonian syndrome sequel to the disease. His results were uniformly favorable and his report was sufficiently optimistic to warrant a trial even in the late sequelæ of encephalitis.

In order to determine its power of penetration, an experimental approach was made by Dr. A. E. Taft and Mr. M. C. Borman in the laboratories of the Pennsylvania Hospital. Their report which will be published shows that an attempt at intra-vitam staining with solutions stronger than those recommended for therapeutic use, resulted in a penetration of all tissues and diffuse coloration of all organs with no microscopic evidence of selective staining. With solutions of therapeutic strength, no macroscopic or microscopic coloration was detected, but maceration of the nervous tissues in 75 per cent alcohol extracted sufficient of the dye to give a yellowish fluorescence. Acriflavine as a basic stain for block of brain tissue gave a selective staining of cortical cells. Most of these reactions might have been predicted from the recent work of McClellan and Goodpasture,²² who found that healthy tissue did not stain intra-vitam, while injured or degenerating tissue took trypan blue sufficiently to give a clear picture. Their findings are of tremendous value for future investigations.

METHOD OF PREPARATION AND ADMINISTRATION OF
NEUTRAL ACRIFLAVINE.

The water should be distilled from glass immediately before use and a normal saline solution prepared with chemically pure sodium chloride. Heat to boiling point and add enough neutral acriflavine to make a 0.5 per cent solution. Mix thoroughly and while at boiling temperature filter through best quality filter paper. Sterilize by direct boiling for five minutes and cool to body temperature in a dark place, as chemical decomposition is induced by the influence of light. Inject intravenously. The utmost care is advisable to keep the solution from escaping into the peri-vascular tissues during injection. Several instances of this occurred in our series and even a few drops of the 0.5 per cent solution produced considerable pain, heat, and redness extending far beyond the area directly affected. We employed a dosage of 10 c. c. of the 0.5 per cent solution for eight successive daily injections, and an interval of 30 days was allowed to elapse before re-injecting the series. It is said that doses of as much as 30 c. c. may be safely given, but the marked coloration of the urine, mucus and other secretions led us to refrain from injecting this maximum.

REPORT OF CASES.

The clinical result may be judged by referring to Table I.

SUMMARY.

Fourteen patients showing the sequels of encephalitis epidemica were treated by the intravenous injection of neutral acriflavine. There was marked improvement in three instances; improvement in seven and slight improvement or none in four. The series is too small and the time which has elapsed since the injections too brief to permit even these moderate conclusions to stand as final. Unfortunately, it was necessary to take the clinical material which offered at the time. Our choice was practically restricted to patients with a parkinsonian syndrome which in one case—a boy of 14, was complicated by a behavior disorder, and in another—a girl of 14, by a psychoneurosis. In other words, we were dealing with well-established pathology of a type indicative of chronicity.

TABLE I.

Case No.	Age.	Sex.	Onset and symptoms.	Condition before treatment.	Treatment.	Conditions after treatment.	Remarks.
1	30	F	1921. Three days before labor, chills, shaking, abdominal pain, fever, delirium, hemiparesis with right facial palsy. Increase in severity of all symptoms following second childbirth in 1923.	Typical post-encephalitic parkinsonian. Rigidity, facial mask, infrequent blinking and swallowing. Emotional instability with mental depression.	Intravenous injections to c. 0.5 per cent neutral acriflavine on Nov. 10, 11, 12, 13, 15, 16, 17, 19, 20, 1923.	No change in subjective complaints. Better emotional control. Swallowing facilitated, less drooling.	Left hospital. Further report could not be obtained. Both children living and well.
2	32	F	May, 1920. One month after childbirth—fatigue, failing vision, trembling sensations, heaviness of feet, facial palsy, delirium, twittings, thick speech.	Parkinsonian facies and attitude, monotonous speech, infrequent swallowing, drooling, mental depression. Tremor left arm. Painful spasm left foot.	Injections Nov. 10, 11, 12, 13, 15, 16, 17, 19, 20, 1923; Jan. 26, 27, 28, 29, 30, 31, Feb. 1, 2, 1924; April 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Subjective improvement after first series, more active physically and mentally. Stronger—took up occupation.	Injections produced deep yellow-tinged leukorrhea. Child normal and healthy.
3	38	F	Feb., 1922. 3 weeks after childbirth, sudden onset with lethargy, diurnal somnolence and nocturnal restlessness.	Parkinsonian facies, attitude and movements with masticative and tramping movements.	Injections on April 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Body rigidity unchanged. Hands stiff and tramping movements lessened.	Child normal and healthy.
4	38	F	Jan., 1918. Influenza (?) followed by excitability, irritability and emotional instability. Aug. 1924, four weeks after confinement, gradually developing tremor, weakness and stiffness.	Extreme degree of parkinsonism. Coarse tremor of both arms and left leg.	Injections on April 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Subjective improvement. Can walk faster. Less tremor. Appetite and sleep better. Less fatigue. Vision keener.	Living, healthy child.
5	34	M	April, 1920. Fever followed by gradual development of rigidity, weakness and tremor.	Typical parkinsonian with coarse tremor of hands.	Injections on Jan. 26, 27, 28, 29, 30, 31, Feb. 1, 2, 1924; April 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Subjectively better. Moves and responds more quickly. Able to work.	

TABLE I.—CONTINUED.

Case No.	Age.	Sex.	Onset and symptoms.	Condition before treatment.	Treatment.	Conditions after treatment.	Remarks.
6	49	M	1922. Somnolence, tremor, muscular twitches.	Parkinsonian expression and attitude. Coarse, jerky tremor of hands, especially left. Extreme diurnal somnolence and nocturnal wakefulness.	Injections on Jan. 26, 27, 28, 29, 30, 31, Feb. 1, 2, 1924.	Complete relief of subjective symptoms. Gain in ambition and strength. Working. Diurnal somnolence and nocturnal insomnia disappeared.	Gained 40 lbs. in two years.
7	39	M	1921. Gradually developing weakness, stiffness and tremor.	Parkinsonian. Left facial weakness. Dysmetria in left hand.	Injections on Jan. 26, 27, 28, 29, 30, 31, Feb. 1, 2, 1924.	Friends think he is brighter but improvement seems very slight.	
8	25	M	June, 1921. Sudden diplopia followed by weakness, staggering and somnolence.	Parkinsonian of moderate degree.	Injections on Jan. 26, 27, 28, 29, 30, 31, Feb. 1, 2, 1924.	After one month was strikingly better, more active and able to resume work.	Gained 31 lbs. in 3 years.
9	25	F	April, 1921. Severe headache, diplopia and weakness. Felt paralyzed.	Parkinsonian of moderate degree. Irritable, stubborn, unmanageable.	Injections on Jan. 26, 27, 28, 29, 30, 31, Feb. 1, 2, 1924.	Subjective improvement. Less somnolence, less stiff, stronger. Relapsed.	Rapid weight gain.
10	33	M	Influenza in 1918. Aug., 1923. Generalized abdominal pain and fainting spells.	Mild parkinsonian. Subjective feeling of weakness. Pain in abdomen and legs.	Injections on Apr. 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Very slight improvement.	
11	17	F	1920. No acute symptoms. Abrupt change in disposition and behavior.	Marked parkinsonian syndrome with parenthesis left face and tremor. Drooling. Irritable and stubborn.	Injections on Apr. 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Stronger, tremor decreased, less stiffness.	
12	14	M	Jan., 1920. Sudden somnolence, delirium, tremor and diplopia.	Rigidity and tremor. Somnolent, irritable, pugnacious, suspicious, sexually precocious.	Injections on Apr. 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Subjectively better. Moves easily, stronger, less tremor. Relapsed in two weeks.	Inordinate appetite, rapid weight gain. Becoming feminine in disposition.
13	17	F	Gradual development in 1922. No acute illness.	Parkinsonian picture with rigidity, tremor and added neurosis.	Injections on Apr. 6, 7, 8, 9, 10, 11, 12, 13, 1924.	Subjectively better—less tremor, increased strength and activity.	Urine tinged deep yellow and increased output and local irritation after injections.
14	19	M	Jan., 1922. A period of excitement followed by four weeks of somnolence.	Loss of ambition. Stiff and slow movements. Increased saliva. Emotional instability. Diabetes insipidus.	Injections on Apr. 6, 7, 8, 9, 10, 11, 12, 13, 1924.	More ambition. Vision seems clearer. Ideation more rapid.	Insatiable appetite for meat. Fluid intake and urine output increased to 12 qts. daily with low specific gravity.

There were no acute cases * available for the experiment; the period of time intervening between the initial illness and the beginning of treatment averaged about 3 years, 4 months, the shortest being 2 years. We feel that this method of treatment is promising, and it should be tested out in the acute stages of the illness and in recent sequellæ.

NOTE ON ENCEPHALITIS COMPLICATED BY PREGNANCY.^{23 24}

Since it is rather rare to find in an unselected series of only 14 patients, four cases in which the evidence of pregnancy and encephalitis were so closely associated, we felt that the case notes of these four cases should be included, so that they might be available for reference. In Case 1, pregnancy produced an exacerbation of the symptoms of the disease. The five children resulting from the pregnancies apparently are entirely normal.

NOTES ON CASES.

CASE 1.—H-10,044, K. C. Female, age 30 years. History negative until 1919 when her first child was born, and with retention of part of the placenta she had a fever and was thought to have influenza. At this time she had a sudden sharp pain in the arm and a sensation of being slapped heavily. Recovery ensued in two weeks and there were no symptoms until the birth of the second child in 1921. Three days before this childbirth, she was seized with chills, shaking and pains referred to as labor pains. The baby was born normally, and at once with a high fever the patient developed an excitement and an occupational delirium which lasted for two weeks and following which she was "paralyzed on one side of the face and in the opposite arm," and her speech was indistinct. Use of the arm was regained within a few weeks, but the face and speech were affected for more than a year. She complained of pain in the head and insomnia and developed depression and crying with lack of interest and ambition, and an inability or unwillingness to help herself, and she became indignant if anyone urged activity.

An "herb doctor" advised pregnancy for the relief of this condition, and while carrying the child she showed no new symptoms. The labor was easy and normal and the child healthy and nursed at breast. Following childbirth she showed an increase in the severity of all symptoms, sat motionless with head bent and drooled saliva.

* Since this paper was completed, we have had the opportunity to treat one acute case. A woman of 30 was admitted in the eighth week of encephalitis. There was low fever, somnolence, delirium, thick speech, difficulty in swallowing, strabismus, ptosis especially of right eyelid, expressionless facies, sluggish reaction of pupils and paræsthesias. Practically all the symptoms disappeared after six injections of acriflavine.

Examination of the heart, lungs and abdomen was negative. There was no arteriosclerosis, and the blood pressure was systolic 124, diastolic 88. There was present in the extreme the condition which we shall refer to briefly in later patients as parkinsonian. A mask-like and fixed facial expression, staring gaze and infrequent winking. The body was held stiffly, and moved slowly and *en masse*, with almost total abolition of the automatic associated movements. The voice was low pitched, whining and monotonous, swallowing was infrequent, and saliva dribbled from the mouth constantly. Tonus of all muscles was increased with equally increased deep reflexes and without pathological reflexes. There were trophic changes, thin, shiny and greasy skin. Considerable delay and effort were experienced in initiating or in stopping a movement, but propulsion or retropulsion were not present. Habitually all parts were kept partially flexed but there was no contracture. Universal muscular weakness was present.

Vision was complained of as "muddy," but fields and fundi showed no well-marked change. Ocular movements were normal, pupils were dilated, equal and reacted well. Residuals of facial paralysis were present on the right, and attempts to smile gave typical risus sardonicus. Hearing and vestibular function were normal. The tongue was small and showed a coarse undulatory tremor. Sensory examination showed no change to any modality but subjectively there were tenderness and pain over the anterior and inner aspect of the right thigh. At times great and uncontrollable emotional instability were shown, always depressive, but there was little other mental abnormality aside from a desire for sympathy and reassurance.

Laboratory examinations, including red, white, and differential counts, blood chemistry, blood Wassermann, spinal fluid Wassermann, urine and feces were negative. Basal metabolism was normal. X-ray of sacrum showed lower sacral segment ununited.

CASE 2.—H-10,061, H. A. Female, age 32 years. Health good until May, 1920, one month after birth of her third child, when she developed a severe cold with cough which was treated with influenza serum. She complained of fatigue and failing vision, and of heaviness of the feet and a "trembling feeling" on arising. She went to bed and soon the right arm began to twitch violently, and a diagnosis of chorea was made. The left face became expressionless, the left lid dropped, and her speech was thick and indistinct. After being placed in a sanitarium she developed mental clouding and delusions of poisoning and persecution, and of marital infidelity. After a few weeks she became clearer but continued depressed and inactive. In the autumn of 1920, she became noisy and excited, insisted that she was dying, and showed weakness in the left hand and dragging of the left foot.

Following this her sexual demands became excessive and pregnancy resulted. The child was born at full term in normal labor, and was breast fed. It has grown slowly in weight and always seemed weak, but talked at normal age and is mentally bright. The patient grew progressively more unable to help herself, cried more and showed a tendency to fall backward.

Suspension of the uterus and ligation of tubes was done in June, 1923. Examination showed no physical abnormality. There was a well-marked parkinsonianism with tremor of the left arm and painful spasm of the left foot. The deep reflexes were exaggerated, and there were no pathological reflexes. The left pupil was larger but both reacted equally well. Speech was monotonous and expressionless and swallowing was delayed at times. Mentally she was depressed and apprehensive. Psychometric examination assigned her a mental age of 13 years 7 months, and an I. Q. of 85.

The blood count, including differential, and blood chemistry were within normal limits. Blood Wassermann was negative. Repeated urine examinations were negative. Gastric analysis showed nothing but starch retention. Gastro-intestinal X-ray showed no noteworthy findings.

CASE 3.—C-2689, M. M. Female, age 38 years. The patient's health was good until February, 1922, when three weeks after childbirth she suddenly developed lethargy, a somnolence during the day and a wakefulness at night. She was confined to bed with these symptoms for 12 days and then was able to be up. Gradually there developed a muscular stiffness, with remarkable and uncontrollable masticative and clamping movements and movements of the feet aptly described as tramping. Her complaints were of drowsiness during the day, weakness, dizziness, and tremor of the fingers. Her heart, lungs and abdomen were negative. There was a well-defined parkinsonian condition, with the added movements of jaws and feet which she insisted that she could not control, and which were exaggerated by any excitement. Her urine was negative, and the fluid contained five cells, mainly lymphocytes. All reflexes were within normal limits, and the pupils reacted normally. The child is living and in excellent health, never having shown any symptoms referable to the disease.

CASE 4.—C-2688, E. S. Female, age 38 years. There is a history of influenza in January, 1918, following which she was excitable, irritable and emotionally unstable, but without symptoms suggesting encephalitis. In August, 1922, she was confined after an uneventful pregnancy. At this time the obstetrician said that she had "kidney trouble," but there were no noteworthy symptoms until four weeks later when she first noted a tremor which was followed by weakness and stiffness of all muscles. Grossly her physical examination was negative. She presented a most extreme picture of the parkinsonian syndrome, with a coarse tremor of both arms and of the left foot. All deep reflexes were exaggerated equally. The pupils presented no abnormality of form or of reaction. The blood Wassermann was negative. Her child is living and apparently healthy in every way.

BIBLIOGRAPHY.

1. Wilson, George: "The Treatment of Epidemic Encephalitis" *Atlantic Medical Journal*, Vol. 27, page 68, November, 1923.
2. Spiller, W. G.: *Archives of Neurology and Psychiatry*, Vol. 10, No. 1, page 127, July, 1923.

3. Carnot and Blamontier: "Sodium Salicylate in the Treatment of Epidemic Encephalitis." *Paris Medical*, Vol. 13, page 177, Feb. 24, 1924.
4. Riggs, C. E.: "Iodide of Sodium in Epidemic Encephalitis." *Minnesota Medical Journal*, Vol. 6, page 588, October, 1923.
5. Leiner, J. H.: "Treatment of Encephalitis Epidemica with Sodium Nucleinate." *New York State Journal of Medicine*, Vol. 23, page 478, December, 1923.
6. Songues, A.: "Intra-spinal Injection of Casein in Epidemic Encephalitis." *Bull. et Mem. Soc. Med. d. Hosp. a Paris*, Vol. 46, page 478, December, 1923.
7. Thomas Andre and Rendu, H.: "Hexamethylenamin in the Treatment of Encephalitis Epidemica." *Paris Medical*, Vol. 11, page 273, Oct. 1, 1923. See also Lehrmann, *Deutsche Med. Wochenschrift*, Vol. 49, page 822, June 22, 1923.
8. Wemberg: "Treatment of Epidemic Encephalitis with Colloidal Gold." *Progres Médical*, Vol. 38, page 440, Sept. 1, 1923.
9. Billigheimer, E.: "Treatment of Epidemic Encephalitis with Mercury." *Klin. Wochenschrift*, Vol. 2, page 1215, June 25, 1923.
10. Tolle: "Treatment of Epidemic Encephalitis with Mercury Ointment." *Deutsche Med. Wochenschrift*, Vol. 2, page, 1215, June 25, 1923.
11. Bonhoeffer, K.: "Arsphenamine, Neo-Arsphenamine and Silver Arsphenamine in Epidemic Encephalitis." *Deutsche Med. Wochenschrift*, Vol. 47, page 229, 1921.
12. Lastre, B. C., and Bourdet, F. A.: "Diphtheria Antitoxin in Encephalitis." *Semana Medical*, Vol. 27, page 575, Oct. 28, 1920.
13. Polon, Albert—demonstrated "Typhoid Vaccine in Ascending Doses" before the Vanderbilt Clinic Neurological Conference, April 23, 1924.
14. Crofton, W. M. and Costello, D.: "Encephalitis Treated with Influenza Bacillus Antigen." *British Med. Jour.*, Vol. 1, page 601, April 23, 1921.
15. Moore, R.: "Treatment of Epidemic Encephalitis by Intra-spinal Injection of Own Serum." *California State Jour. Med.*, Vol. 20, page 387, November, 1922.
16. Grunewald, E. A.: "Convalescents Serum in Epidemic Encephalitis." *Deutsche Med. Wochenschrift*, Vol. 46, page 1243, Nov. 4, 1920.
17. Russel, C. K.: "Influence of Horse Serum in Treatment of Epidemic Encephalitis." *Canadian M. A. Journal*, Vol. 12, page 705, October, 1922.
18. Hemholz, H. F., and Rosenan, E. C.: "Three Cases of Epidemic Encephalitis Treated with Specific Serum." *J. A. M. A.*, Vol. 79, page 2068, Dec. 16, 1922; see also Vol. 80, page 1583, June 2, 1923.
19. Rucks, W. W.: "Hypertonic Salt Solution in Treatment of Epidemic Encephalitis." *Jour. Oklahoma Med. Assoc.*, Vol. 15, page 308, October, 1922.
20. Bohland, K.: *Deutsche Med. Wochenschrift*, Vol. 45, page, 797, 1919.

21. Buss: "Treatment of Epidemic Encephalitis with Acriflavine." *Deutsche Med. Wochenschrift*, Vol. 49, page 476, April 13, 1923.
22. Goodpasture, Ernest W., and McClellan, Robert H.: "A Method of Demonstrating Experimental Gross Lesion of the Central Nervous System." *Journal of Medical Research*, Vol. 44, No. 2, page 201, December, 1923.
23. "Encephalitis in Pregnancy"—see Quarterly Cumulative Index, page 208, 1921, and page 236, 1922.
24. Brown, W. M.: "Encephalitis in Pregnancy Near Term." *American Journal Obst. and Gynec.*, Vol. 1, page 368, 1921.

DISCUSSION.

DR. SOLOMON.—Dr. Strecker has given us a very suggestive point of view. We know that the pathology of encephalitis is of an inflammatory nature but we are by no means sure of the organism that causes this reaction. Our therapeutic endeavors must be directed toward finding something that can reach this inflammatory process. Dr. Strecker's line of reasoning seems perfectly logical. Many attempts have been made to find something that would affect this process but mostly without success. We have tried the so-called convalescent serum both intravenously and intraspinally without seeing anything of value accrued. We have watched other people try spinal fluid injections into the veins, using non-specific proteins, milk, and the like. Dr. Strecker deals with acriflavine, which seems more correct theoretically than these other methods, and as he has obtained what he believes is a result of some value, the method should be tested further. I do not believe that we should sit back in a hopeless attitude, but rather we should continue our attempts along this line.

DR. DARLING.—Dr. Strecker's paper appeals to me as being of unusual interest for two reasons: First, because he has directed our attention to a new mode of treatment. Second, because he has achieved results that would permit great optimism, yet has presented them to us with cautious reserve. We shall all be encouraged to carry on his work, and a few years hence the true value of the method will be known. Acriflavine has been used in many interesting ways. Jacob and Verasingham have reported success in the treatment of gonorrhea by the intravenous injection of neutral acriflavine. Gonorrhea and epidemic encephalitis have, at least, one common characteristic; they are both deep seated infectious inflammations that are impossible to reach by means of local applications. If an intravenous drug affects one such condition favorably, it is conceivable that it may the other. This, of course, eliminates the possibility that acriflavine may be specific in its action against the causative agent of epidemic encephalitis. Some work done by Spencer indicates that acriflavine does not have a bacteriocidal effect on all bacteria. He tested the protective power of the drug given intravenously to rabbits infected with staphylococcus aureus and white mice that had been given the minimum lethal dose of virulent pneu-

mococcus. No bacteriocidal effect could be demonstrated. When judging any form of treatment for this disease, we must be careful to limit our expectations by our knowledge of its pathology. In most cases, there is sure to be more or less destruction of nerve tissue. No therapeutic agent can be expected to restore these degenerated cells. Furthermore, our experience with the treatment of neuro-syphilis has taught us that it is exceedingly difficult to introduce into the body an agent that will reach the deeper nerve tissues. If it is possible to begin treatment before there is any destruction of nerve cells, a complete prevention of sequellæ is theoretically possible. Once sequellæ have developed and become established, hopes must be limited to halting the progress of the disease. Personally, I am very glad to have this bit of hope offered in the treatment of epidemic encephalitis. At the next meeting of this Association, others should have series of cases treated in a similar manner, and I hope that Dr. Strecker will then report the progress of the cases described today, together with his later experiences.

DR. STRECKER.—I want to be sure not to leave a wrong impression. As far as we have gone our work has not convinced us that we have found a specific method of treatment, but we have a logical method of approach and very rapid improvement in the one acute case leads us to hope that other physicians who see more acute cases will at least try out this method of treatment as an experiment.

INTERPRETATIONS OF MANIC-DEPRESSIVE PHASES.*

By EARL D. BOND, M. D., AND G. E. PARTRIDGE, PH. D.

We were led to this review by the impression that the reaction groups of the manic-depressive type are still obscure in their physiology and psychology, and that the types of persons who have manic-depressive breakdowns are more elusive than is generally recognized.

While all psychiatrists have easily and closely followed the ups and downs of mood and of psychomotor activity as described by Kraepelin, few claim to have gotten inside to describe any inner process which might rival in importance those great swings which may be seen from the outside.

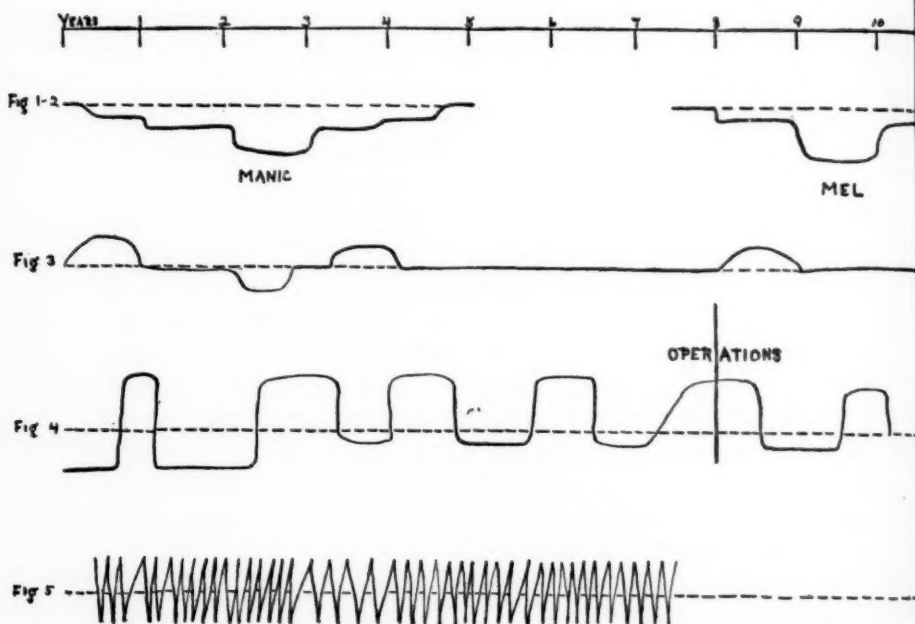
In the light of certain theories about these inner processes, we have studied about 40 cases, comparing those who have shown manic or manic-depressive phases with those who have shown only depressions. The circular forms have been of special interest because interpretations must be tested two ways. We wanted to know what light these hospital cases could throw on well-known theories, and what ways were reasonably open for research under hospital advantages and limitations.

Dr. Cowles in 1903 linked nervous exhaustion, melancholia and mania into a descending chain. The essential idea was that the step from melancholia to mania was always downward, and that mania in recovering must pass, perhaps very briefly, through melancholia and a state of nervous exhaustion to get back to normal. Bresler in 1906 also put the curve of the excitement below that of the depression, to avoid the suggestion that mania was a super-normal phase and that it was necessary to pass from one phase to another through the normal. In discussing conflicts we notice that a modern view puts the depressive lower than the manic

*From the Department for Mental and Nervous Diseases, Pennsylvania Hospital. Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

phase, and in a certain way makes unpleasant affect carry both phases below the normal line as Dr. Cowles unified the two phases in his conception of fatigue. (Figs. 1 and 2.)

A diagram (Fig. 3) shows a woman beginning a third attack of excitement at 72, handicapped by severe heart and kidney lesions and by sciatica. For a year she showed constant and intense psychomotor activity, the degree of which can be judged



from the fact that she slept about an hour a day. Then for a month she was quieter but still exhilarated, with several hours of depression on one night; during this month she slept about five hours out of 24. At the close of the month she recovered and went home, where she maintained a normal life for some years, sleeping about five hours. If her excitement was a fatigue phenomenon, there was no evidence of a demand for rest either in the psychosis, in convalescence or in her life for the next years.

A clinical reason for not adopting the idea of an infection-produced toxin as a getatable cause of manic-depressive psychosis is seen in the second diagram. (Fig. 4.) The operations follow:

Extractions of 21 teeth, tonsillectomy, colectomy, right oophrectomy; vaccines and serums.

And up to the present physical correlates of the manic-depressive phases come to rather a disappointing negative. The work of Farr and Lueders, showing a difference in the effects of exhilaration and depression on gastric secretion, and of Henry, showing diminished intestinal mobility in depressions, cannot yet furnish us explanations of the phases. Nor can the close relation demonstrated by the physiologists between internal secretions and emotions, which makes Bleuler see some special lability of the glandular system as the basis of manic-depressive psychosis, help us far, as we see when we try to pin any psychological data to the definite behavior of any one gland.

The physical correlates are disappointing, but not discouraging. There is laboratory work being done, much of it already recorded, on digestion and metabolism that ought to advance our knowledge of the interaction of physiological and psychological factors. It seems likely that some of the "chemical attitudes," which, as Bleuler says, would seem to correspond with the emotional disturbances of manic-depressives, may soon be found. It is up to us to bring to a conference with the physiologist, facts about the psychological mechanisms which shall be as clear-cut as his own.

ENDOPSYCHIC CONFLICT.

So the problems of endopsychic conflict and personality become a trifle urgent. We have to do something more than describe the ordinary personality traits, in order to get the data to help in the re-education of the patient, or the removal of conspicuous obstacles; we have to see what the reaction is on the psychic side. What is the patient doing or trying to do in his psychosis?

May we remark first that the person who says that the manic-depressive patient is easily accessible must have some limiting definition of the adjective. The mood is accessible. But as compared to many dementia præcox patients, there is much that is tantalizingly beyond reach. In our circular cases, we met in the excited phases a flood of talk that told too much; in the depressions the talk dried up and told too little; in convalescent or normal intervals the patient had lost interest and wanted to forget his trouble, and

often the physician felt obliged to let well enough alone. Anyone who does not appreciate the work involved in the studies made by Dr. Dooley in five manic-depressive cases (1921) should try to duplicate them.

In the manic group we were, however, able to find such conflicts as the following, which show a characteristic dependence upon public opinion: A breakdown occurred in a man, who was sensitive and proud of his standing in the community, when bitter political criticism attacked a coterie to which he belonged. In another man, very self-conscious, a sudden break followed unpleasant circumstances connected with his public position and temptations in private life to conduct at variance with his ideals. A man who had suffered many disappointments because his own socialized nature had placed him at the mercy of the decisions of other people, became manic when he found a situation in his office which he could not manage and found himself, at 40, in love. Such conflicts will be mentioned again in our remarks on personality.

One case with a single manic attack, we give somewhat in detail. The history by relatives showed a young married woman with a good personality, amiable, apparently well adjusted to life, active and happy. Her child became sick, and the doctor's visits were criticized by her mother-in-law as being directed at the patient and not at the child. The patient worried over both the illness and the criticism and was tired by the work of moving—a move which took her further away from her mother and near to her mother-in-law. A manic attack came suddenly.

In the psychosis at the hospital, her psychomotor activity was extraordinary. She destroyed her clothes and bedding, posed nude in the shape of a crucifix, was aggressive, struggled constantly in packs, climbed to the top of her room and the bathroom, washed in the toilet bowl or with a blanket wet with her urine, ate ravenously. When most destructive, she seemed elated; when she tore things she sometimes said that she was worrying. She talked and sang constantly, was profane and obscene. She said she was a virgin—St. Elizabeth; that her child was born as Jesus was; that the hospital was a place for fallen women; that nurses ought to be married to priests; that she wanted to be a "true white nurse"; that she had power to save; that all her activities were to save people—the brain work to save people made her tired. She said

that her mother-in-law was dead; that her husband was dead—when he came to see her he was raised from the dead; everyone was dead. She said that sometimes her husband was not good to her; that Bess (herself) would cry herself to sleep; that she had been a quiet and good-living girl; that her husband worried her, came home drunk; she had been told that he passed as a single man. She talked of 3's and 5's and 9's.

In convalescence from this first attack, the patient gave some account of her thoughts during the onset and the illness which were of special value because she was naive. She had not read popular psychology. She remembered fairly constant worry about the physical condition of her child. She regarded her husband as "not so affectionate in disposition as some," and she admitted that she may have felt neglected, but "he did and does the best he can," and she had little to complain of. She worried some when he was out with the fellows. There was no change in him previous to her illness. She was not jealous. She was contented in her home life; her husband was frank, home a good deal, congenial in going out to the theater and to amusements with her. Two months before her illness she moved into a new house away from her own mother and nearer her mother-in-law. The latter insinuated that the doctor was more interested in her than in her little boy, who was sick. She was tired by the moving and settling—always working quickly.

In the psychosis she remembers having a vision that her mother-in-law was dead, and telephoning to ask if her husband had died, thinking that everyone was dead. She thought of nine people and five which made 14, the number of the Dominican beads. She tore clothes because she did not want anything from the new home. In climbing she was trying to get out of the window, guesses it was to climb to heaven. She talked fast to save people, struggled in packs to become pure and strong. She does not remember any effort in her activity to escape from unpleasant thoughts and feelings. She remembered thinking that the doctors were priests. She was not angry or resentful. She thought her clothes did not belong to her.

What are some possible interpretations of her behavior? It is not difficult to think that fatigue precipitated a disorder of organic sensations and reduced inhibitions, or that a toxin of unknown

origin did the same thing, so that the patient talked about whatever things in her life had received special consideration or were recalled by associative processes. The things she talked about may have had more to do with the illness as causes than the things she did not mention.

But it cannot be considered accidental that in her attack she did not want clothes from the new house, that she thought her husband and mother-in-law were dead (that she wanted to be boss), that she said her husband was neglectful and sometimes alcoholic, that her talk was about virginity and fallen women, that her constant struggles against packs were for the purpose of growing pure and strong.

She emerged from the attack with much wonder at it, and a happy and serene mind, untroubled by doubts about her husband and very certainly conscious of no unsettled conflicts but only of the need of resuming her life, expecting an average amount of trouble, and relying on the help of her church. That is, in the onset, in the attack, in convalescence she herself did not have any glimpse of a vital conflict within her, something which she must feverishly hide. Her talk gave to the hearer the impression that she had a deeper conflict than she knew.

Everything in the case agrees with the psychoanalytic conception that recovery from a manic attack coincides with pushing certain troublesome ideas out of the conscious. But nothing shows whether the process of putting certain worries out of the focus of attention was a factor in recovery, or a mere accompaniment. The same question will arise when we learn more about how digestive processes change from the manic phase to the normal. But the answer to such questions can be facilitated now by attempting to arrange sequences of events on the chemical and psychological or other levels, so they shall be proof against criticism at every point.

A verbatim report of a manic flight in a man who, we knew, had deep-seated conflicts regarding his personal traits, and whose breakdown was precipitated by known events, tells us practically nothing of the conflicts nor of the situation that was most in his mind preceding his illness. There is a mass of addresses, dates, names, but very little is on the surface that would give any indication of the mental content as a whole. The connecting links are wanting, and we might suspect that in the flight he is concealing his thought.

Most of the items seem to be fragments of recent thought content. The interpretation of his flight as evasion is in keeping with his remark that he kept nothing in mind that was not of definite value for the future and that the past could take care of itself.

A man now 43 had a depression in early life, before his marriage 18 years ago, and he has since had a succession of excitements and depressions. He is naturally mentally active and alert, a hard and tense worker, with good business capacity, and inclined to worry. He is religious, conscientious. Strains between his own and his wife's families are unusually bad, and in his relations to his father, who is domineering and who wants to keep the patient subordinate in the business, there is a factor of undoubted importance in his breakdowns.

The manic flights of this patient as in the preceding case show us little definitely about the mental conflicts. In them there are many allusions to financiers and to his wife. At various times he was irritable and excited, euphoric and mischievous. In his normal condition he is very moral, modest and scrupulous; in his manic states he was boastful—he is the boss of the hospital, he can be 100 per cent of anything he wants to be. He is erotic in his talk, soils his room, is profane, and obscene. He says he is going to revolutionize things, he can curse and swear as much as he damn pleases. In a depressed state there was consciousness of sin and unworthiness.

Another man, 44, shows a relation between his hypomanic behavior and his inferiority sense and successive failures in contact with social environment at important points; disappointments in love affairs, failure to rise in his business connections, failure to receive a military appointment for which he was in line. In his hypomanic state he was boastful, emphasized his virtues, expressed confidence in the future, and was over-affable and condescending. But this man retained insight, was never far from reality in his ideas and reactions, and made a good recovery.

A man of 53, whose professional and financial success has been limited but who has held some offices, became broadly hypomanic in what appeared his first attack. Closer examination of his career indicated that for 10 years he has been having wide swings of activity and depression so fused with his natural temperament that it is only in retrospect that their pathological character becomes entirely clear.

In his hypomanic state he compensates for all his limitations by a type of activity that, as was suggested, has been interwoven into his normal behavior. He now makes very much of his family connections, and more of his incidental acquaintance with or relation to people of note. He is elaborate and ceremonious in his manner, but is quickly irritated at opposition. He uses full names and titles, appoints an entourage, renames the hospital as a country club. He indulges in much playful self-praise; he is becoming a "second-class superman"; he diverts from his subject, and an outsider might think him hypomanic, but he does this purposely—he returns, he insists, to the main theme; he likes to be facetious and sometimes amusing. His political success has been due greatly, he says, to his so-called exuberance; he was more cordial, more frank, more sincere and more jolly than others.

In two cases of marked hypomanic reactions occurring in young men in the early twenties, the history did not show any immediate preceding episode, nor any conflicts, nor was there on superficial examination revealed any evidence of the archaic material such as psychoanalysis sometimes finds. Analysis was not carried far enough to demonstrate its absence, but so far as the study went there was revealed nothing except a temperament of the manic type. One, so far as we could learn, was always somewhat of the Peck's bad boy type. He says he was the "usual boy." He was happy, active, quick-tempered, always had good confidence. In his hypomanic state he was irrepressible, immensely overactive, mischievous. As we say, we did not discover his complexes or what in his manic reaction he might have been running away from. He settled down uneventfully in a good recovery.

The other case was somewhat similar. He was probably always overactive, good-natured, loquacious, self-confident, strongly social. Home life was pleasant, but the death of a sister which affected all the family deeply must be considered a partial precipitating cause of the first attack in this case. In the hospital, in his hypomanic state, he was exceedingly talkative, hard to manage and a good deal of a troublemaker; it was hard to see when his illness ended and his natural state began as he recovered.

The group of cases considered especially in this study provides rather scant material for the investigation of the endopsychic conflicts in depression. Some had no recorded depressions. The group

considered comparatively with the first group, containing 16 cases in which depressions had been observed but no excitements, throw more light on the psychology of the depressions. In this group there are included depressions more or less of involuntional type, and there is room for discussion also as regards the distinction between psychoneurotic and manic-depressive, or mixed forms of reaction. But something seemed to be gained by taking these depressions rather compositely, and considering the personality background and the evidence of psychic mechanism of the depressions.

As contrasted with the first group nearly all cases showed, usually beginning early in life, some downward tendencies of mood, proneness to worry or anxiety in some form, or doubt, inadequacy or insecurity. There are exceptions, but on the whole there is more of a variety of nervous phenomena in this group than in the other. Particular episodes of a distinct nature appear to be less common in the second group, but the background was rather that of a general and perhaps growing inadequacy with new or increasing responsibility. Work became more voluminous, re-marriage added to financial burdens, complications came up in work, a child gave cause for worry. The depressive reactions were not so sharply marked as the manic reactions, not so closely related on the whole to the current situation; at least the current situation was more indefinitely causal so far as could be determined. Some of these reactions were simple depressions, some were depressions with some delusional content. In all of them there is evident a surrender of effort to cope with practical situations. There seems a lack of ability to look toward the future, a great excess of attention is given to present minor ailments; there is demand for much attention. It is not so evident how, or whether, in the state of painful inactivity, complexes are revealed or adjusted, or satisfaction gained by substitution of objects, but two or three cases may be examined from this point of view.

There is the case of a woman of 40 years, in whom little of a morbid nature appears in the personality. She had a happy life as a child, very happy, was active, alert, busy, but not intense, not nervous, not uncomfortable. She was satisfied, never wanted great things, wanted only a happy life. She was married at 27, and has had a happy married life. There were no children (a doctor told her she could not become pregnant), but although they would have

liked children, she does not regard this as a great deprivation. She and her husband have been great companions. There was no jealousy, no misunderstanding. It hurts to be asked such questions, she says.

Quite suddenly, after lifting a heavy radio set and experiencing a sharp jump in her side, she began to decline into a depressive condition and developed a remarkable wealth of somatic changes, while remaining entirely clear. The central theme was that her body was changed in feeling and in its physiology generally, and practically no part of her body was as before. Her free productions showed a great detail and a great variety of separate somatic ideas. She feels changed, different in many ways, and feels as though she were living in a different world from other people. She feels as though she didn't belong in a bed, in an automobile; she no longer cares for the pleasant times with her husband, visiting him at his business, riding with him. After her accident something seemed to be going on in her body that should not be there—or there may be something missing—there is burning; she feels as though her heart were being burnt out, the tongue seems seared, her hair is crisp; if she drinks water it comes up hot. The saliva seems to be hot when it goes into the stomach. She is different from others; wouldn't she be, in fact, if she had a liquid in her system that others do not have, she asks. There seems to be something in her stomach that makes her different from anyone else. As soon as she puts anything into her stomach it feels as though there were a chemical plant there; there is burning quite close to the skin as though an acid were poured on it. Something has leaked out of her, or else she has something in her that others do not have. When she takes a bath the water seems to have something in it like a coal dust. She has a burning feeling all over. She is perfectly sure that there is some acid in her. She wonders whether she had something in her different from other people, and it burst when she lifted the radio and let acid run all inside her. It seems to her that something has taken the blood out of her veins. When she touches the sore spot there seems to be some connection with the ovaries, but where she was hurt appears to be the only spot that is alive, the rest of her seems benumbed, but particularly the stomach. She thinks that if they make a blood test they will find no blood. When she hurts her finger the blood looks yellow. It feels as though there is an acid

plant in her, because her breath has a chemical smell. She wishes she might be as she was last year. She is different, the opposite of what she was in every way.

The patient herself can throw little light on her ideas or upon the beginning of her trouble, except as aforesaid, she says she hurt her side, and the rest is the consequence of her injury. Everything was all right before, nothing had happened. She had been cleaning house, but had plenty of help. There had been nothing unusual; they had been to a little wedding, that is all, there was no upset. There was nothing about the radio. She was not interested in it much. Her husband was and her sister; she would go to bed, and the two others would sit up till one and two o'clock getting the late stations, but they did this only a few times.

This case is described in some detail, not because an adequate explanation may be made of the content of the endopsychic processes, but as suggestive of the type of problems that must be dealt with in the study of the depressive reactions. In this instance, the patient left the hospital shortly after the preliminary study was made, and the case was followed no further. But some points are outstanding; her great emphasis upon her happy life, upon her modest desires, her satisfaction with life, her ignoring her childless state, her emphasis upon the perfect companionship of herself and husband, her overemphasis upon her habit of spending her leisure time going down to sit and talk with her husband when he worked, rather than going out anywhere. The inference is that she ignored too much, was able to shift into her unconscious too many desires, and that her security in her husband, superficially serene, was a house of cards. It could bear no invading facts whatever. Her injury was the point at which impinged a number of precipitating motives. She had obvious reasons for emotional reactions to the radio, her injury associated itself with her physical deficiency which she had tried to ignore and had compensated for by over-attention to her husband. The rich symbolism of her somatic ideas is obvious. What her mind is really trying to accomplish, if anything, in her reaction, must in part remain as conjecture. She has gained by her illness a vast amount of attention. She had been cared for, and has ceased to take initiative in various ways. She is no longer eager to go with her husband; she speaks of her love for him in the past tense. She feels that she is in a different world.

She seems to be busy with ideas closely related to the object from which she received her injury.

There is a description of the manic phase which we wish to call to your attention—that of the patient's "fighting by feverish and restless activity every approach that might touch him on a tender spot." A patient whom we cited above kept her troubles concealed from others and herself, except where in the manic attack she exposed them. If, as we hear, the manic phase is to be interpreted as a fight with a partial breaking through of complexes, is the depression to be considered a full surrender to these same insurgent complexes?

Some light comes from our circular cases. One of them, with a remarkable monthly alternation which has been observed for years in the hospital (Fig. 5), shows in the manic phases sexual complexes and works quickly to wild excitement. If the repressed complexes are here bursting through, then the ensuing depressions, as surrenders, might be expected to show the complexes dominating the situation. But in a day this patient becomes depressed and thus describes her state: "I can't think; there is a curtain; I sit and look at a wall; I am stupid, a blank, with a bad taste in my mouth." The complexes are not there, and on this point the patient's descriptions agree, whether they are given in the depression itself or in an excitement. There is much to make one say that the complexes have been pushed into the unconscious rather than surrendered to, that they have been dealt with as in a change from the manic phase to normal.

Of course, we are confining our attention to a retarded depression, but we do not find that this form is excepted from general statements to the effect that depressions are surrenders *of* effort, *to* environment. Hoch clearly marked off a retarded depression as a protective attempt, saying that it firmly repressed unconscious wishes. Indeed, he stated that the very adequacy of the repression took all of the patient's energy and produced the inadequacy in other fields.

If this is so, we may find some fault with the pictures of mania as a fight, and depression as a confession of failure; of the work of the patient as that of Sisyphus, in which the uphill work is the manic warding off of approaches to the complex and the downhill slide the confession of failure. We can almost reverse the picture and

think of the manic fighting rather vainly to keep in the unconscious wishes which are threatening to escape, while the victorious melancholiac has them well caged and efficiently sits on the lid; we can think of the manic as "at the mercy of his environment" and of the melancholiac as dulled and indifferent to it.

We are considering only our own retarded cases, and leaving the surrender to affect to one side, in order to suggest a certain danger in figures of speech which have served brilliantly in teaching new ideas, but may be harmful later on as correlations have to be made with physiological data.

PERSONALITY.

Studies of personality in manic-depressive psychosis are not numerous, and most of them are but little systematic and not very complete. Kraepelin's delineation of the four fundamental states of the manic-depressive temperament is still the best basis upon which to work, and much is to be learned also from the excellent work of Kretschmer, but both in the field of clinical studies of individual cases and in the problem of personality in what might be called its scientific aspect, we still have a good deal to do in defining our problems and in working out methods of approach. There are a number of helpful outlines, such as those of Meyer, Davenport, Watson, Yerkes, Wells, Allport, Muehl, Hoch and Amsden, and a recent revision of the last-mentioned by Amsden. The question is what one wishes to accomplish in a personality study. It is quite possible to make a pretty complete psychological review of a person with the methods now available without getting anywhere. On the other hand, the ordinary clinical entries about the disposition of a patient, although useful, leave much to be desired. We think that by far the best plan, certainly for preliminary studies of personality, is Amsden's which avoids both extremes. It has a coördinating idea and is not so detailed that the personality becomes lost in the mass of descriptive data. By this plan one may in a not unreasonably long time find the main lines of development of an individual—the general qualities of his intellectual endowment, his guiding motives and interests, his idea of himself as manifested in his behavior, and finally, his habits of adjustment and the adequacy of his adaptation to the environmental situations and his own inner

urges. This gives us an understanding of a person that is often immediately useful; it gives data for working out types and it makes a good basis for further study if one wishes to go beyond the more manifest traits and try to find origins; for example, by the methods of psychoanalysis. It is mainly this way of studying personality that we have followed, but with some modifications that might, we thought, add to the scientific value of results, especially making a more detailed enquiry into the adjustments.

A composite picture of the manic-depressive personality in the cases showing at some time manic reaction may be attempted from our study. No case conforms entirely to the picture, but the main features are generally or characteristically found. They do not differ from the normal in their intellectual qualities, so far as can be determined by the methods employed, which were not formal. They usually did good average work in school. There is one borderline intelligence among them, and some who had difficulties in school, especially from the competition of outside interests or the love of mischief. There is no evidence of very exceptional mental ability in any of the cases, but the general average intelligence as judged by success in school and elsewhere, and otherwise, is good. There is some evidence that concentration upon routine work was not very good in some cases, but this is not pronounced and in one case there must have been exceptional capacity to work. There is not much specialized interest, either intellectual or motor, except in one instance in which there have been at times strong special interests carried out well. Their interests seem rather generic, closely related to the interests of other people, and in only one case does there appear to have been anything carried on alone as a personal hobby.

As regards "demands": That is, the internal drive that makes a person seek objects and experiences, these are conspicuously strong in this group. There is no case of apathetic attitude, with possibly one exception in which the psychosis developed early and there has been lack of ambition, but some strong interests of a motor kind. The motor interests predominate; these people have all been physically active and alert, and in general they are physically strong even after several mental breakdowns. They tend to be players of the active games, but, except in one or two cases, there is no specialized athletic interest. Social interests are strong. They like to be

in things in which others participate, and some of them, though not all, are inclined to take the lead. Outside of their vocations, there is no case of any marked intellectual interest at all fundamental. They read, are interested in affairs, but there is no intellectual interest in which they specialize. Nor does anyone of them appear to have carried far the development of any art, though there is a good level of artistic appreciation; they are sensitive to impressions; like things nice and artistic, and in this there seems to be considerable difference as compared with the group selected as tending only to depressive reactions. As regards the sexual life, in no case has there been elicited any evidence of abnormal tendencies, and in two or three cases in which the sex history was pretty fully obtained, the development was to all appearances quite normal. In one case there have been manifested in manic phases some homosexual tendency, but with this a general eroticism and marked heterosexual interest also. There is at least no manifest sexual aberration—the class is marked indeed by its sexual normality. At the same time there is evidence of strong sexuality. There is strong social interest directed toward both sexes.

These people are marked by strong friendliness in most cases. Social demand is indeed likely to be somewhat excessive. They are dependent upon people for their happiness, and they do not bear loneliness very well; at least their mode of life does not provide, as a rule, for much solitude. As a class they seem to lack conspicuously a goal-idea of life. Unlike the dementia præcox patient who has perhaps very early become set in one direction, they do not erect a goal for themselves, except of a general character. They want to succeed, to be in business, to have a position and make money, perhaps, but their activities are not clearly directed towards an end. They are prone to scatter. They drive their mental and physical powers hard sometimes, but their efforts are not directed upon one thing, as a rule. Except for the fact that the activities are likely to be social, and there is a center in the desire to exploit themselves in some way, there appears to be no fascination with a special mode of life which keeps some people—some of the psychopaths, for example—from being progressive. They are susceptible to environment and they reflect in their activities the multiplicity or fragmentariness of the environment. In their manic flights, we see there is a marked fragmentization of the personality. In some way per-

sonality in them appears to lack unity. It has been suggested that endocrine imbalance in these cases may prevent unification of the personality. For one thing they do not have a background of good self-understanding. They are not introspective; they do not go back and knit up the past and plan ahead—although there are exceptions to this. They are guided a good deal by their immediate feeling responses, which are quick, if not profound, and apt to be uncomplicated. Their “ambivalence” shown in marked contrasts from excess of responsiveness to violence and hatred in their manic states reflects a trait that seems to be present in their normal personality.

The degree of security, the self-appreciation, of these manic-depressives is not easy to comprehend. As a class they express strong self-confidence; they have been satisfied with their own health, their intelligence, their social qualifications, their chosen work. They think they have adapted themselves well in most of the important phases of life. They present a good front. They praise themselves freely—some of them. One has “never had a bashful moment” in his life. But when examined with reference to the more indirect evidences of insecurity, there are a good many signs of pretty deep feeling of insecurity and some strong doubts. In one case a wealth of such doubts, referring to personality and personal appearance, came out on a superficial analysis. One has deep conflicts relating to being dominated by his father. Sensitiveness to criticism is prevalent in these people, and two at least have broken at the point at which the opinions of others were strongly felt. There is considerable evidence coming from our cases to support the view that in this class there is a more or less perpetual seeking of outer reality to escape from internal reality. What that internal reality is, is not very clear, but they do not bear well close examination; they are not defensive especially, but they do not themselves pry into their own natures very much, and are not much interested in doing so, but will talk very freely about their experiences, their desires, what they aim to do in the future. They are apt to make sweeping generalizations and so clear away the details of questions. At the same time, we say, they do not lack frankness. But they had rather apparently see life and themselves as they think it ought to be; they would rather take their motives as unselfish, their interest in making money as altruistic, their interest in other people as helpful, than to go into analyses of the foundations.

They do not like minute mental work in any field, and dislike it as applied to themselves. They are poor psychologists. They do not understand themselves nor other people. They do not, perhaps, have greater faults than others; it may be this ordinary weakness of human nature that they do not like to recognize in themselves, but they seem resistant to self-understanding.

They are likely to be good-natured and agreeable whenever they are situated so that they are not greatly opposed. They do not, as a rule, bear contradiction well, and they may be a little intolerant, tyrannical, argumentative, irritable if crossed. They are prone to be quick-tempered. (Observe their hatred when hypomanic of those who restrain them—all the time professing good will to all.) Since they demand a good deal, there is a considerable sum of disappointment as a background in their moods, but they have two advantages in dealing with this. They are not by nature introspective and retrospective; and they are optimistic. They see a good deal in the future—expect to succeed. They do not like to think of unpleasant experiences; they forget, are apt to forget what they do in their manic attacks, and in some cases there is a clear amnesia at this point. In one case it is shown that the forgetfulness is not complete, since memories of one manic attack recur in the next. That they may be extremely sensitive to people is shown in a variety of ways, especially their strong reaction to criticism as mentioned above. Their demand for attention, shown especially in their hypomanic states, may be based upon some degree of insecurity as regards their own personality; they are whole and integrated, so to speak, only in a social setting in which they take back something from their environment. They are frank, but not essentially fair-minded, and apparently cannot be without upsetting their adjustments in the social life. Take all the evidence, therefore, and we see a good deal of insecurity in these manic-depressives.

In general, the adaptations of the manic-depressives, as represented in our group, are, at least when superficially considered, good. If we run over the history we see that they have adapted themselves well to school life, were liked by their teachers and play-mates. They did very well in play, were active, might be leaders. There is no evidence that they do not make good mates in marriage, and good parents. They succeed in their business efforts, are enterprising and may be good workers for others. Their social life is

broad and normal. Take the elements of life separately, they adjust well. But it is when we consider life as a whole that we see some failure in adaptation. They have a number of traits that prevent the parts, so to speak, from making a good whole. The continuity is not of parts well linked together; the past is not quite related to the idea of future. It is hard to predict what they will do next; they lack, as it were, historical perspective. They fail, if at all, not through having some faulty type of adaptation, but from not carrying out well the mode they adopt; the aggressive meeting of situations does not become the progressive and systematic attack on life. It is only perhaps to the extent that some excess of demand for recognition enters, or something else not quite clear that determines their social activities, that they depart from a normal type of adaptation. But their fragmentariness, instability, tendency to "ambivalence" and extremes, strong instinctive reactions, distractability, lack of insight, taken all together, do apparently prevent complete adaptation and pave the way to breakdown when obstacles arise, from within or without, to the smooth progress along lines of the preferred way. It is not easy to draw the line between normal and abnormal personality. We cannot say that we find in the personality of the manic-depressive the cause of his breakdown. At the same time, it is not sure that in looking back we can see entire normality on the personality side in any one who breaks down manic-depressive-wise. There are general traits of the class seen when the picture is made a composite one, that are clearly not average, and which manifestly lead towards mental troubles independently of any physiology that may be involved in the case. We should not care to say that manic-depressive psychosis has ever a strictly psychological basis, however, so far as personality is concerned.

Two cases, in each of which there has been pretty typical hypomanic reaction, will show about the two extremes in our personality delineations, as regards the degree of normality found in the personality.

This man is intelligent. There were no decided preferences in school work and no failures. He had a full well-rounded boyhood. He was active in all the major sports, athletic, and had mechanical interests. Health was always good. He was practical, not at all a dreamer. He had intellectual hobbies, but has done much reading

of current affairs. He had a fairly varied social life, but no strong social drive. He is religious, has strong faith, is moral. He is a hard worker, with strong desire to make money, is devoted to his family. He has strong confidence, is optimistic, helpful to others, sympathetic, generous, likes political contests, bears defeat well, is not irritable, but may show impatience if opposed. There is no self-depreciation, but he is not conceited. He is not a worrier. He has engaged in many activities. He is systematic in his work. He has led a frank open life, and the only significant traits are a tendency to somewhat unrestrained expenditure of energies, and some sign of emotional excess. Adjustments were good. Sense of lack of education is the only weak spot in his confidence.

In a Jewish girl of 19, there is not only an unfavorable environment at home, but apparently some inherent difficulties of considerable magnitude. The most important one, in this case, is the low degree of intelligence. With an I. Q. about borderline, there are interests to satisfy which would require high intelligence. So there is a wide disparity at a fundamental point, and a tendency to unreality. She has strong demands, is social, and very ambitious. She wishes especially to have the society of educated and intellectual people. She wants to be of service, to be able to give people "intellectual advice." Her talk is full of evidence of dissatisfaction and feeling of inferiority for which her manic reaction is evidently compensation. She says she has always worried until lately, she is sensitive towards members of her family and feels that she is not taken seriously enough and that she is criticized, and says she is teased because she is the baby of the family. She wishes to accept no favors. She has not been able to adapt herself very well. She does not fit into a workaday existence, is inclined to feel above her work, wants education but dislikes the thought of school. She could not make herself work and study to improve her ability in letter writing which she much desired to do. Her plans are impractical because they are out of relation to her mental capacity.

The depressive cases, those who thus far have shown no manic phase, we feel are too heterogenous to be dealt with much further, so far as making a group personality study is concerned, than has already been suggested in dealing with the endopsychic conflicts.

The depressions, more than the manic phases, seem varied in content and form, but the difficulty here is in part that of making a precise diagnosis when we are dealing with mild depressions.

CONCLUSION.

The study up to the present time is to be regarded rather as an attempt to find fruitful ways of approaching the manic-depressive mental processes than as conclusive at any point. We feel the need of coördinated study in which the whole background of personality is considered in close relation to the manifestations of the disordered state. There is as yet no view of this psychosis based upon physiological data that is satisfactory, and, in the light of our cases, we should have to conclude that none of the generalizations about complexes and the like are very convincing. Both the personality and the mental reactions appear to be rather widely varied from case to case, and we must admit that the principle of unity that would make the phases of manic-depressive reactions take their place as aspects of one fundamental psychological, or physiological, process is wanting. A single small group (our cases in which manic reactions have occurred) show sufficient homogeneity so that they may be characterized roughly, but only so, in a general sketch, in which some common features of personality are shown. We see, also, that both manic phase and depression may be produced on the basis of this same personality. Further study of the depressions may show how the depressive cases may be related to the manic and be brought better under general formulas, but at the present time we find no very hopeful conceptions in the field.

PRIMITIVE MENTALITY AND THE RACIAL UNCONSCIOUS.*

BY WILLIAM A. WHITE, M. D., WASHINGTON, D. C.

The subject I want to discuss today is the constitution of consciousness from some points of view that are somewhat more recent than those that have been definitely formulated in former literature. I am going to diagram consciousness in an exceedingly simple way as a triangle with the base down. I am going to refer to this part of the triangle (indicating apex) as the region of awareness. It is not necessary to discuss it; we are all familiar with it. Then beneath the region of awareness, right down here (indicating), is the region of the fore-conscious which contains all sorts of material, but that material is characterized by the fact that it is available and accessible at any time by the individual and so to use Jung's language it might as well be conscious, and might as well occupy this region. It is available whenever the individual wishes it. Beneath this region lies the territory we are particularly interested in today. In the first place there is the upper part of this region which is designated as the personal unconscious and which is called the unconscious by the Freudians, and contains the material, which, in a psychoanalytic sense, has once occupied the upper, conscious region and then been repressed or shoved back into this region which is called the psychoanalytic or personal unconscious. You are familiar with it. Then there is the region here, which is also unconscious, lying beneath the region of the personal unconscious which Jung calls the collective unconscious, but which is better designated as the racial unconscious and constitutes the philogenetic background upon which the rest of the psychic material is erected, so to speak, as a superstructure.

Now, we therefore have two regions, the personal and the racial unconscious, which can be collectively designated as the unconscious. Just a few words about that unconscious region, even if I do not split it up any further. That unconscious region

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

you will say is composed of two separate types of experiences; certain material here which has once occupied the foreconscious, and has been experienced within the life-time of the individual; and certain material down here which has never occupied that position within the life-time of the individual, but has only occupied such a position within the life-time of the race. It is to me quite as obvious that there must be this racial psychological background as that there should be any other kind of developmental background, functional or anatomical. Take, for instance, an example from the language of savages. They do not count by units, but they count in collective fashion using as the measure of number an expression which means the hand and which if we translate it would be the number five, and so when they see any group that corresponds in number to the number of fingers on the hand, they use the word which corresponds to hand to designate the number in that group, and so five would be expressed by one hand; ten by two hands; fifteen by two hands and a foot and twenty by an expression meaning the whole man. Now the interesting thing is that we have projected into our present civilization precisely such methods of counting. We have it in the expression four-score and precisely that method of counting is preserved in the French *quatre vingt*. We have also the same method of counting preserved in the Roman numerals; five, if you will, or one hand; ten or two hands; fifteen two hands and the foot and twenty the whole man. Here are the hands and here are the feet. (Indicating on the blackboard Roman numeral XX.)

Now, of course, it might seem that this is personal material that was transmitted from parent to child, but it seems quite obvious to me that that is an incomplete explanation. We can only reach a complete explanation of this conscious phenomenon by interpreting it in the history of the development of counting through the race and the translation of the words which the savages used. So here in the use of Roman numerals and in the use of the method of counting by twenties, we have preserved in language two components, neither of which belongs in the individual experience of the person so counting, one handed down to him through the parents, which is the personal component, and occurs in this region of the consciousness and the other an unconscious component from the racial experience which is a part of the racial inheri-

tance. So I believe that in any end result of activity, either thinking, feeling or acting, if we had time and opportunity we could trace two components; one, the component that was in the experience of the individual and the other the component traceable to the experience of the race; and one of the points I want to make is, that only this personal material is analyzable and that the racial material cannot be analyzed. It can only be interpreted by methods of comparison. That is one of the aspects of what I believe is the new method that needs to come into psychiatry, viz., the comparative method I have talked of recently. So much for that.

There is another feature of the situation which I wish to call attention to in this connection and that is that in most of our recent psychiatry, whether descriptive or analytic psychiatry, the method of investigation that has been used is based, perhaps not exclusively but nearly so, on the perceptual components of consciousness to the exclusion very largely of the projicient or motor, expressive or emissive components. In other words the method of study has been based upon content very largely rather than upon process.

Now a study of both the personal and racial unconscious gives us the data for supplementing this work upon the perceptive and receptive aspects of consciousness by corresponding work upon the emissive side. There has been very little work done along this line, but I would like to call your attention to one discipline that has been engaged, particularly in the study of the expressive side of conscious now for a century, which is not recognized by psychiatrists; that is the discipline of comparative philology. Philology has been a well-recognized discipline now for a hundred years and it has very many interesting and important deductions and conclusions which are valuable, I think, to psychiatry. Just let me indicate along this line some of the things which philology suggests as being of significance: We know that the distinction or one of the distinctions between the child and the adult; one of the distinctions between the defective and the person not defective; one of the distinctions between the savage and the civilized, is that in each instance the more highly developed individual tends in his thinking to be more abstract and less concrete; tends in his thinking to differentiate unrelated and to relate analogous situations more accurately than do those of less development. Take,

for example, in the language of the savage, the expression meaning, "I am washing my face." Here is a definite sentence composed of several words. Vary it a bit and say, "she is washing her face," and they have to use an entirely different sentence made up of entirely different words. Here is a primitive language situation which corresponds precisely to the manner of language of the more primitive types of people.

Take for example a little girl who is asked "what is a wagon," and she answers, "a wagon is, you take a whip, you pick up the reins, hit the horse and away you go." What the little girl is doing here is expressing the entire situation as she sees it or the only situation in which she has become familiar with the wagon, and so when asked what a wagon is, she tells the whole situation. If asked what a horse was, she might say the same thing. There would be no relationship between the two but it would be a corresponding situation. Every concrete situation has to be definitely expressed by a concrete series of words formulated quite separately from every other situation. You see how different that is from the more developed inflectional languages with which we are familiar. Language, just like thinking, has developed from this undifferentiated state into a highly differentiated one. Take for example the word "cut." It can be used almost like a letter; it can be used as a noun, an adjective, a verb; it can be used in the present, past and future tenses; the subjunctive, imperative or indicative mode. The different modes and tenses and parts of speech are all expressed by the same word.

Take for example, if the primitive wishes to speak of groups of different types of animals; a group of birds, a group of oxen, he would have to use entirely different words to express them. There is a remnant of this method left us to this day. We speak of a flock of pigeons, a covey of partridges and a herd of cattle, etc., but in more advanced language, we no longer have to resort to such concrete processes of expression. To distinguish between male and female we no longer use different words. We say count, and add "ess" for countess, so we do not have to use entirely different expressions. We have here differences in the process of thinking which are exemplified in language which correspond to the process of thinking in savages, children and so on.

Now on the motor side I would like to call your attention to the fact of the increasing interest of general neurology in the motor aspects of diseases of the nervous system. You have recently heard Dr. Goodhard give his paper in which he analyzed a lot of the post-encephalitic disturbances. You are familiar with Wilson's disease which has only in recent years been described and which is a motor disease. You are familiar with the extra-pyramidal syndromes which have only recently been stressed. I might mention a number of neurologic conditions which have been differentiated in recent years which testify to this increasing interest in the motor as opposed to the sensory side of the nervous system.

When I went to medical college, the only motor disturbances described were the motor disturbances of pyramidal lesions. Now we have all these and a host of extra-pyramidal motor disturbances so that there is in the general neurological field, a tendency to devote more time to these aspects of the motor system and we find philology itself has certain suggestions to make. For example, if we would understand something of the development of language, we will find that if we study carefully the way in which the different phonetic sounds have come into use, they can be compared with the past history of the material involved. The psychologists for example, are telling us that presumably the almost universal early appearance of such words as *mama* and *papa* in the child's vocabulary is presumably related to the fact that these labials are used because the child first used his lip muscles in sucking, and so the psychologist is able to throw some light upon the development of certain emissive tendencies of the infant.

There is another aspect of this whole situation which I will designate by a cross down here (indicating) and that cross I will call the intrauterine period. Now you know that the psychoanalysts have always talked more or less about dreams and fantasies of the matrix as a desire to get back into the past, into the uterus, and many of those who have not devoted a great deal of thought to psychoanalysis, have thought it was pretty wild talk and a long ways from home, so to speak. We are beginning to get some light upon what happens in the foetus during this intrauterine period. I know perfectly well that in this region we must still resort largely to speculation. I have not the slightest

quarrel with speculation, however, so long as when we use it we know what we are using, because we cannot find out anything without thinking. When we do know about it and begin to think, then slowly certain elements appear to either correct or supplement our speculation and we get at new ideas. Now in this whole uterine period, there is a great deal of what the Freudians have already speculated upon, viz., skin stimulation. They believe that the skin region receives a good deal of stimulation naturally because it is exposed to the environment. There is good reason to believe that practically all the special senses, as hearing, seeing, taste, smell, all receive stimulation in the uterus and there is experimental material upon which these conclusions are founded. There is also a considerable amount of new material being added to our knowledge with regard to what may happen in this intra-uterine period which is coming to us from a new source—comparative anatomy. The neuroanatomists believe that the true function of anatomy is not solely to show the actual concrete relation of one part of the body to another, but only in connection with function. A lot of light is being thrown upon the time period at least when functions may first become active. For example, of the five special sense organs, it is obvious their function cannot be postulated until the structure has been laid down in the embryo.

In the method of Dr. Kappers, in studying what he calls neuro-biotaxis, there is a very definite correlation between the anatomical situations and the actual functional probabilities at least which can be reasoned from them.

We have, therefore, these several regions of consciousness all of which are specific and are proper matter for study. The field of awareness, the foreconscious, the personal unconscious, intrauterine and psychoanalytic and the racial unconscious, and I call attention to the fact that these lines are not intended to separate these one from another, but merely to indicate, in general, the regions about which I speak because I believe, as I told you about language, that consciousness must necessarily contain components that come from all these sources. I think of them as being related to each other much as the strands of a rope are interwoven and as the rope is twisted like the chromosome threads in those pretty pictures Professor Morgan shows of the relative position of the determiners in his fruit flies. I would suggest, therefore, as a

legitimate subject for thought and investigation, the possibility of differentiating material in the end result which is contributed as personal experience of the individual, that which is beneath his personal experience, which is unconscious and is contributed by the race.

In some of our most malignant psychoses, particularly of course *præcox* types, we find material which suggests this region from here down (indicating) and I prefer to designate all of the material from here down that goes into the psychic picture, the intrauterine and racial unconscious, as archaic and I think the prognostic significance of things which we do not understand, we will begin to understand when we understand what archaic material really is. For example, on the motor side of the situation, I cannot be unmindful or cannot consider as unimportant, the fact that some of our *præcox* patients occupy motor attitudes that have given rise to the term, Egyptian attitude, because we see this same attitude in the figures of Egyptian sculpture, and I believe that such a motor attitude must be deeper seated than the personal experiences of the individual, that have taken place since birth.

I could give you a considerable number of illustrations to prove this is not wholly speculative, that there is a lot of material upon which we might make a beginning. I am reminded of some papers we had the other night. I recall to your mind the more or less generally conceded explanation of our sense of time as probably having been generated in this intrauterine period by the fact that the child in utero is constantly and for a considerable period in reception of auditory stimuli from the heart beat of the mother, and I can perhaps close by telling an interesting story about one of the writers of jazz music. Dr. Jelliffe was speculating in a discussion at a medical meeting upon how he had developed such an unusual time sense, and he suggested that his mother might have had cardiac disease. (Laughter.) You have done what I wanted you to, you have laughed. He made this suggestion in a meeting such as this, and when he sat down, a physician arose who said he had been the physician who had attended her, and that she had had a chronic heart disease; and that he had treated her for it and she had died of it. I refrain from giving any more examples. I will close by re-emphasizing the various regions of consciousness and emphasizing in addition what I have expressed

before, viz., that the psyche is necessarily as old as the body; it has therefore its comparative anatomy just like the body and it is a no more difficult matter to think in terms of its history through its different levels than it is to trace anatomical formations back through various types of related species to their origins. I think until we are willing to look at consciousness in this sort of way we will not fathom the deeper problems of mental disease and then too, when we do, we will also begin to understand some of the phenomena which take place at the several levels, and can correlate descriptive material way up here with other material and reach certain coherent conclusions. One individual may perhaps describe something at one level and another at another level and it sounds exactly as if they were talking about entirely different things and yet the two things may be related in all sorts of ways which very frequently some of the speakers have not the remotest conception of, and a lot of apparent differences in thinking may be smoothed out in this way by showing that we are really expressing ourselves at these different levels.

I could not possibly express anything at this level (indicating) that would be understandable at this level (indicating). If I talk of something at this point, the man up here knows nothing about it, and the further down we go the more difficult it is, and after all our whole problem of descriptive psychiatry is largely one of translating the language of the psychoses. In this way of looking at things, we have some conception of the history of the psyche, the psychiatric situation and the racial background of consciousness.

DISCUSSION.

DR. BRILL.—By contrast, I cannot help thinking of some of the jejune stuff we heard here yesterday about the psychoneuroses. I cannot understand how physicians who endeavor to treat mental ailments can ignore everything below the level of consciousness as represented in Dr. White's diagram, and confine themselves to a mere fragment of the whole material; that is, to the conscious elements alone. Listening to Dr. White afforded me much pleasure. I wish we had at least a dozen more talks by Dr. White, who presented to us a viewpoint which clearly explains the fundamental workings of the mind. I feel this way particularly after I heard some of the papers here yesterday. I am very grateful to Dr. White for his excellent presentation and clear viewpoints. I, too, have worked for many years in just these regions that he describes and I cannot see how anyone who makes the slightest efforts to understand can possibly miss all the material

that Dr. White and others working in the same field find in the fore-conscious and unconscious.

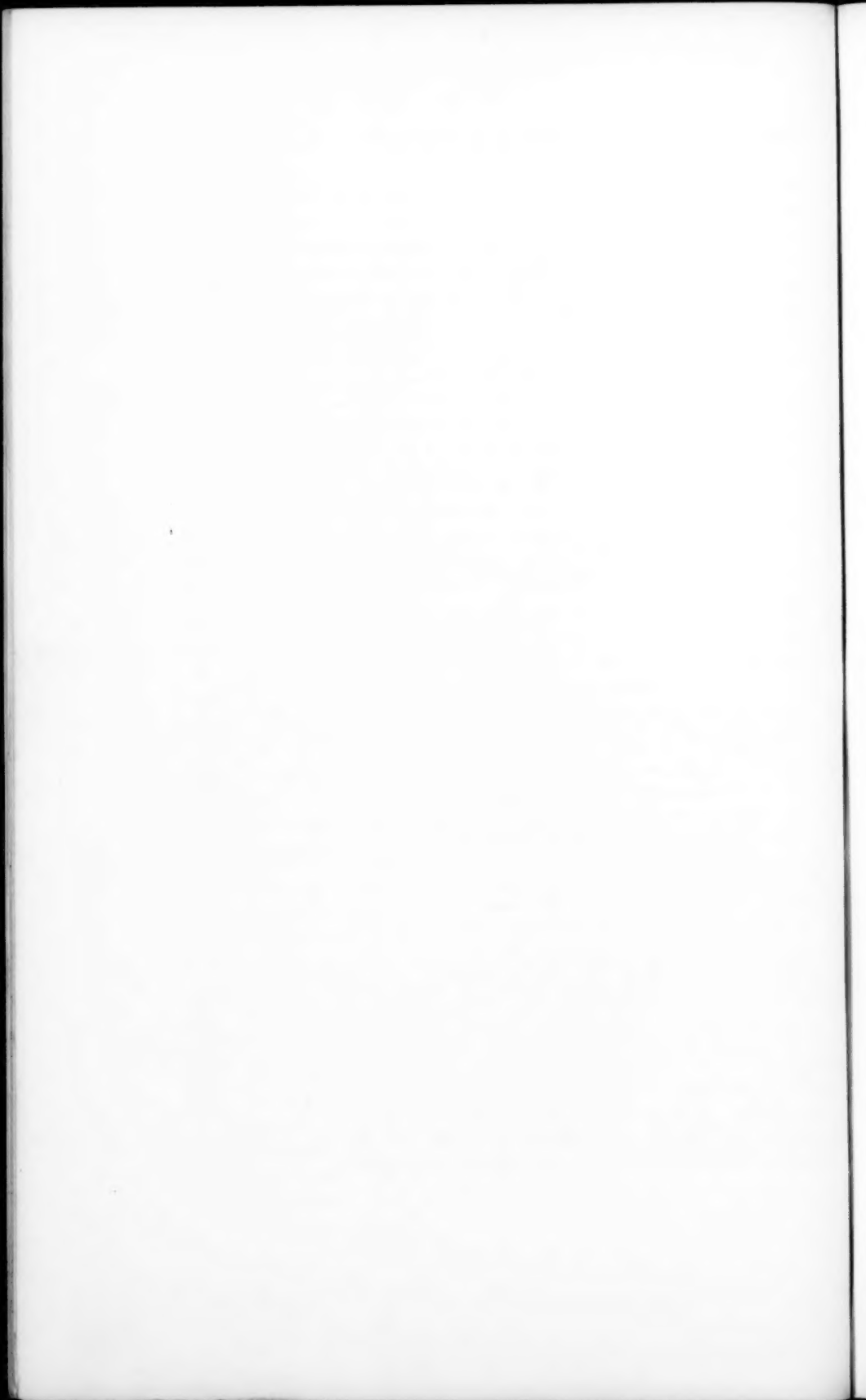
DR. SULLIVAN.—Of course, I would hesitate to consume time solely to offer further encomium to Dr. White; I am sure that is not necessary. Like Dr. Brill, I must express my assumption that you all do accept the concept of the unconscious. The thing which I have in mind, particularly, and the reason for thus taking up your time, is the matter presented in my paper to The Psychoanalytic Association, to which the speaker so kindly referred.

The gist of it is that our efforts to understand motivation, and particularly motivation in schizophrenics, have tended towards a higher evaluation of ontogenetic factors; and raises doubts regarding the phyletic. Taking Dr. White's examples, the counting to which he refers from comparative philology: Actual experience with infants fails to substantiate the matter which Dr. White mentions. By actual observation, we note that they start counting not with five or a number divisible by five, but with the number "one." "One" is simply a symbol for a single thing; something else which they adopt, as, usually, "two," is the symbol for more than one thing. That does not pertain to a racial unconscious but to the individual experience of the child.

And so it seems to be with the motor and psychic symptoms in catatonic schizophrenia. For those, like myself, who encounter resistance to such an hypothesis as that of the racial unconscious, I would like to offer the alternative that many of these manifestations can be shown to be ontogenetic. Perhaps, when sufficient work has been done towards elucidating the mind of the child, we will find in the vast wealth of experience acquired by the infant, that which will explain, *in toto*, these psychotic phenomena. Some very archaic manifestations we already see revealed as the reactivation of prenatal but intrauterine experience.

In other words, while we accept the racial unconscious when endorsed by Dr. White, the need for it in explaining catatonic content and behavior is not yet demonstrated, as the ontogenesis of these can often be proven from study of the infant. As Dr. White has mentioned of his, this, too, is largely speculative, but it is speculation from known data to hypotheses which are methodologically correct, as the simplest inclusive concepts.

DR. WHITE (closing discussion).—The question of the counting by infants is one of those debatable questions which Dr. Sullivan has hit upon and upon which the philologists are not agreed. I have no doubt numerous material which was originally thought of as archaic can be explained by purely personal experiences, but I don't believe that explanation is complete any more than we would believe to be complete an explanation from descriptive anatomy of a structure. Embryology and comparative anatomy would have to be called upon. So we have to go into the question of the racial unconscious in order to get complete explanations. For those complete explanations we must go beyond individual material into the racial material.



ASEPTIC MENINGITIS IN THE TREATMENT OF DEMENTIA PRÆCOX.*

By ROBT. S. CARROLL, M.D., EVERETT S. BARR, M.D.,
R. GRANT BARRY, M.D., AND MR. DAVID MATZKE.

The subject of "aseptic meningitis in combating the dementia præcox problem" was first brought to the attention of the medical profession through Dr. Carroll's paper, so titled, which appeared in the *New York Medical Journal*, October 3, 1923.

Dr. Carroll reviewed the conflicting theories variously entertained regarding the causes of the insanities in general and of dementia præcox; alteration of internal secretions; gastro-intestinal intoxication; psychogenesis, and summarized them by saying, "And these efforts (psychoanalytic) have been fruitful even as have surgical, special dietetic and more direct reeducational methods. But in face of long continued physio- and psycho-therapeutic efforts of rarely equipped minds, there exists today no absolute road of approach to this dire problem."

It has often been observed that improvement sometimes occurs in dementia præcox cases during the leucocytosis of infectious processes and the paper mentioned recalled the excitement of some years ago following the observation of Lundvall of Sweden that during the periods when dementia præcox patients under his care were losing ground a leucopenia was demonstrable and a leucocytosis during improvement. In 1895 Dr. Adolph Meyer¹ had written: "Whether, indeed, the lucid intervals and rapid improvement of torpid cases after infections which produced leucocytosis (typhoid fever, tuberculosis, suppuration, and other conditions) might be due to the fresh regenerative impulse, will be a question worth examining." Dr. Meyer also said²: "In comparing cells with possible degeneration in a terminal dement with those of more acute changes with leucocytosis one cannot help being impressed with the idea that the leucocytosis offers more favorable outlook,

* Read at the eightieth annual meeting of the American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

and the laws of its influence would be worth continued experimental and pathologic research."

At the suggestion of Dr. Bayard Holmes that nuclein be used to arrest dementia præcox, "Numbers of psychiatrists used Lund's solution of nucleinate and cinnamate of soda with arsenious acid injected intramuscularly to produce a plethora of leucocytes. But it was soon found that these aggressive repair cells when lacking pathogenic material to feed upon turned to the normal red cells for pabulum; and that a secondary anemia was thereby scientifically produced."¹

It has been demonstrated by Dr. James B. Ayer² that the injection of serum into the spinal canal of cats produces an acute exudative, aseptic meningitis.

It has also been proven by Dr. Lewis H. Weed³ and others that the spinal fluid is largely produced by the choroid plexuses. The choroid plexus is rendered more permeable by meningeal irritation produced by the intraspinal injections of sera⁴ and Dr. Charles E. Dowman⁵ has utilized this knowledge in the treatment of neurosyphilis.

Based on the observations and conclusions above recited, Dr. Carroll evolved a theory that possibly "an injured choroid interfered with normal chemo-taxis and . . . , perchance, dementia præcox might prove a food-chemico deprivation, rather than a toxic destructive process. In pursuance of this theory, and in hope of restoring choroid permeability, 25 c. c. of laboratory normal cerebrospinal fluid was removed by lumbar puncture and replaced by an equal amount of inactivated horse serum in a case of marked catatonic stupor. The symptoms of an aseptic meningitis followed. No mental change was observed. A week later a second treatment was given. The next day the patient was quite himself for the first time since admission."

Of the small series of cases treated at Highland Hospital, temporary or permanent improvement is reported to have occurred in every case.

This method of treatment was first brought to the attention of the medical staff of the Philadelphia Hospital for Mental Diseases in the spring of 1923. The procedure was at first viewed with skepticism. However, it was decided, after careful consideration and review of the literature which formed the basis of the theory

involved, to try the treatment, attempting to submerge prejudice against it and arrive at impartial conclusions.

Accordingly, the relatives of a large number of unquestioned cases of dementia præcox were written to asking permission to employ the treatment. The first 16 authorizations received, eight men and eight women, controlled the choice of patients. For obvious reasons the relatives of the most hopeless patients were first to consent and the array for the initial treatments was indeed a sorry one. Women and men both were of the untidy, destructive, noisy, or indifferent, vegetative groups.

The first visit to the ward in the women's infirmary in which the treatments were given the day previous was in itself a revelation. Nearly all the women had been brought from the most disturbed building, but it had in all regards the atmosphere of an ordinary sick ward in a general hospital. Women who had previously been loudly abusive or resistively uncommunicative told freely of their physical pain and discomfort. One woman, who had been hospitalized for eight years, persistently plucked her hair out and only cursed in response to greetings before the treatment, talked, saying she did not know where she was nor how long she had been there, but the content of her conversation went back to the period preceding her psychosis. When told where she was and the name of the institution, which had been located where it now is since the onset of her sickness, she ventured to locate it in a general way.

A Jewess who had been mute but unfriendly for months cursed the doctors roundly for "experimenting" on her. This same woman a few days later went to the serving room in the building when not observed and carried back bread and butter to the eight patients in her ward and the day following got the whole group of them out of their beds, marshalled them into the dining room and demanded service. This from a woman who for months had not spoken to any person, either relative or hospital worker, and had been trusted only with aluminum bowl, plate and spoon. An extremely delusional and unfriendly negress after her second treatment was found placing basins at each patient's bedside saying: "My Heavenly Father tells me they will need them when they vomit." The need was real as she knew from experience, even though we might question the source of her inspiration.

Among the first men treated, improvement was marked in several cases. The summary of one case follows:

CASE 10.—J. T., age 20, single white male of Italian parentage. Admitted to psychiatric wards of the Philadelphia General Hospital, April 21, 1923, and regularly committed to the Philadelphia Hospital for Mental Diseases May 17, 1923, with the provisional diagnosis of dementia præcox (hebephrenic) which was confirmed at staff meeting May 25, 1923.

Course in Hospital.—On admission, "attention hard to gain and difficult to retain; grimaces and occasionally smiles in a silly way." Later notes state "he is cleanly, in bed, eating well, devoid of facial expression except when conversation is attempted, when he throws his head and laughs." Still later he was given continuous baths, as he was assaultive without provocation. On July 10, just previous to treatments, he was foolish in manner, answering most questions with silly laughter, though at times saying "yes" or "no." Was disoriented except for name, had no cares and did not want or even ask to go home.

Treatments.—On July 12, 1923, he received the first intraspinal treatment, reacting quite violently physically. Mentally since the first and subsequent treatments, he showed marked improvement, was up and around the ward after his temperature had subsided and made himself extremely useful to the nurse. (Charge nurse stated he was worth any two attendants.) He was freely accessible, fully oriented, memory good for recent events. Claimed he did not remember some things mentioned occurring previous to treatments. Was allowed ground parole and never violated any of hospital regulations. Realized he had passed through a mental upset and states the treatments did him a great deal of good.

Final Results.—Paroled to the custody of his relatives September 12, 1923.

The above summary was made in October. At the time the boy went home the relatives said he was as well as he ever had been. The social service workers advised the family to find employment for him and to see that he got out for exercise, but the instructions were not carried out. The neighborhood was rough and when the patient ventured out on the street he was jeered at by children on the streets and taunted with having been in a "nut house," etc. We felt he would have done better if his environment could have been more favorable. However, he returned to the hospital in December as bad as he had been before treatment. He is now reported as Case 35 in the case summary attached as follows:

CASE 35.—J. T., white male, age 20. Admitted to the Philadelphia General Hospital April 21, 1923, to the Philadelphia Hospital for Mental Diseases May 17, 1923. A case of hebephrenic dementia præcox of four

months' duration. This case was treated in the first series, had a good remission, went home for two months and was returned to the hospital confused, silly, irrelevant and incoherent. Showed mannerisms, was destructive and impulsive. Received five more treatments; physical reaction unusually severe. Is again in a remission, quiet, orderly and helps with the ward work. He is, however, somewhat silly and foolish which did not characterize the first remission. He is now working on the ward and in the occupational shop. Final result, remission.

It is the aim of this paper to report the work done along this line at the Philadelphia Hospital for Mental Diseases so we shall refrain from detailing at this time the remarkable results obtained in cases in other hospitals. Before briefly summarizing the clinical results obtained in the 49 cases here reported, we wish to say that most guarded conservatism was exercised in recording improvement or remissions and if we have erred at all it is in failing to record improvement in cases where it was not quite marked or in stressing the degree of benefit received by some cases which did not enjoy remissions. There were no deaths in this series, no persistent untoward neurological symptoms and only one patient was made worse mentally. One female patient died of pulmonary tuberculosis a few months after the treatment and it was surmised the end may have been hastened by the treatment. She improved mentally.

Summary of the 49 cases treated shows that there was no improvement or only temporary improvement in 14 cases; six cases have enjoyed remissions, one of which relapsed but responded again to treatment; 28 cases have registered continued improvement or such marked improvement that it should be mentioned, six of them relapsing in from two to four weeks. Allowing for relapses, 66 per cent of cases treated have received benefit which is still lasting after from 2 to 11 months.

The cases used in this series were all characteristically dementia praecox and while great care was taken to eliminate other types of psychosis, no effort was made to take special cases of dementia praecox. On the contrary, they were taken, as before mentioned, from the groups at random, because permits for the proposed treatment had to be received from the relatives of the patients and it was the first 16 of these permits received that determined the cases treated.

TABLE I.
SUMMARY OF 49 CASES TREATED AT PHILADELPHIA HOSPITAL FOR
MENTAL DISEASES.

Case.	Age.	Year in hosp.	No improve- ment.	Im- proved.	Remis- sion.	
1.....	22	9	×	..	..
2.....	26	6	..	×	..	Three weeks later.
3.....	30	4	..	×	×	
4.....	33	3	×	..	..
5.....	35	2	..	×	×	×
6.....	43	4	..	×	×	×
7.....	19	3	..	×	..	Two weeks later.
8.....	29	4	..	×	×	
9.....	23	5	..	×	×	
10.....	20	1	..	..	×	Twelve weeks later.
11.....	18	1	..	×	..	
12.....	19	1	×	..	..
13.....	24	3	..	×	..	
14.....	40	1	..	×	×	Two weeks later.
15.....	22	1	..	×	×	×
16.....	38	2	..	×	..	
17.....	29	1	..	×	×	
18.....	25	3	..	×	..	Three weeks later.
19.....	22	3	×	..	..
20.....	20	3	..	×	×	
21.....	24	4	..	×	..	
22.....	38	2	..	×	×	
23.....	31	2	×	..	..
24.....	26	4	..	×	..	
25.....	24	1	..	..	×
26.....	37	2	..	×	×	
27.....	30	2	×	..	..
28.....	16	3	..	×	×	
29.....	31	3	×	..	..
30.....	28	2	..	×	×	
31.....	38	2	..	×	×	
32.....	36	2	..	×	..	
33.....	31	2	..	..	×
34.....	34	1	..	×	..	
35.....	20	1	..	..	×
36.....	22	1	×	..	..
37.....	23	2	×	..	..
38.....	29	2	..	..	×
39.....	45	1	×	..	..
40.....	22	1	×	..	..
41.....	35	2	..	..	×
42.....	34	1	×	..	..
43.....	23	1	..	×	×	Four weeks later.
44.....	19	1	..	×	..	
45.....	37	1	×	..	..
46.....	15	2	..	×	..	Two weeks later.
47.....	20	6	..	×	..	
48.....	29	1	..	..	×
49.....	37	1	×	..	..
Total			14	28	7	7

The treatment for all the cases was essentially the same and was repeated in from 7 to 21 days. At the time of the treatment, certain cases were selected as controls. These controls had spinal fluid withdrawn, but no serum injected and were placed under the same environmental conditions as the others. With each treatment other controls were selected so that each patient in the series acted as a control at one time or another during the course of the treatments. Thus we were enabled to note results seen two weeks after the first, second, third, fourth and fifth injections of the serum.

In the preparation of a case for treatment, measures were taken to lessen the nausea and febrile reaction that was manifested after the serum injection.

If the treatment was to be given on Thursday, Tuesday the patient was allowed to be up and about the ward, and Tuesday night he received two grains of calomel in fractional doses, followed by a saline Wednesday morning. Wednesday afternoon the patient was put to bed and placed on a liquid diet.

For the administration of the serum, a lumbar puncture was made and spinal fluid equivalent to the amount of horse serum proposed for the treatment was withdrawn. In these cases the amount was 20 mls. When 20 mls of spinal was obtained, the normal horse serum—free from any preservative—was allowed to flow into the spinal canal by gravity. This was accomplished by means of a 20-mil Luer syringe connected to the spinal puncture needle by a rubber tube. It was found necessary to force the last few mls with gentle pressure on the plunger of the syringe. The spinal fluid obtained was taken at once to the laboratory for analysis.

The patient was now put to bed and the foot of the bed elevated. This last was done so as to hasten the diffusion of the serum through the spinal canal. The temperature, pulse and respiration were taken every four hours until there was a return to normal. As there is a more or less severe febrile reaction, certain symptoms are to be regarded as danger signals. Ordinarily the temperature rises in the first four to eight hours to 103 and returns to normal in four days. If, however, there is a persistent low temperature of about 100 degrees, it should be considered a danger signal and no further treatment given until the temperature is normal. Under no condition should a patient with a fever receive

an injection of serum. Also if the patient has a marked anaphylactic reaction, such as a skin eruption, etc., further treatment should be withheld until the system is alkalized and symptoms in abeyance. We have found 1:10,000 adrenalin solution efficacious in the prevention and treatment of anaphylaxis. Further, it has been noticed that an eosinophilia of over 15 per cent in the spinal fluid is a contraindication for further treatment.

LABORATORY REPORT.

It is the aim of this report to describe briefly the technique employed and results obtained in the cytological examination of the spinal fluid in cases of dementia præcox under "serum treatment." In order that the difficulties met with may not repeat themselves, it is well to consider briefly some of the elementary phenomena of cytology.

It is well known that the isolated cell is most sensitive to physical conditions, such as temperature, drying, Ph, and salt action, and these must be considered in the determination of a cell and differential count made on spinal fluid. In the first place spinal fluid, whether in the form of transudate or exudate, is normally on the alkaline side and is very sensitive to variations in Ph, so that it is of value to see that containers used in collecting spinal fluid are free from any contamination; that is, neutral and sterile. A second factor should also be remembered that cells have a tendency to precipitate in this fluid, also to adhere to the glass of the container; also that post-mortem changes very rapidly set in so that the count should be made as soon as possible after the withdrawal of fluid. A third factor, namely, that in the fixation of a smear for a differential spinal count, there is a tendency for slow drying of the specimen. This is a very important factor and one that causes no little trouble in such an examination. And when it is remembered that a blood smear dries in 3 to 5 seconds and that the cells in a spinal count are fixed by virtue of their own cytoplasm, it is easy to see that the most rapid fixation (without artificial heat) is desired. A fourth factor encountered in any account where centrifugation is employed, *i. e.*, that of the breaking down of the cells and an unequal precipitation of them due to their varied specific gravity, is hard to overcome, but may best

be met by using a low speed centrifugation for a definite time (5 minutes). A fifth factor of too intense staining by the usual blood staining methods and a poor differentiation of cytoplasm and nucleus resulted in the employment of Giemsa's stain, which gave very satisfactory specimens. Bearing in mind these factors the following technique has been employed and the results obtained are the most satisfactory of the many tried for this purpose:

(1) Ten c. c. of spinal fluid free from erythrocytes and under the usual sterile conditions is received directly into sterile neutral centrifuge tubes and stoppered with a sterile pledget of cotton.

It is well to have as nearly as possible 10 c. c. or an equally satisfactory equivalent amount in each tube if more than one examination is made at a time, as these tubes may then be placed directly in a centrifuge without danger of contamination in balancing them for the precipitation.

(2) The fluid should be received as soon as possible at the laboratory after withdrawal, preferably within the first half hour.

(3) Cell count should be made immediately on the arrival of the specimen in the laboratory and the differential commenced as soon as possible.

In making a cell count it is well to use a Levy or some similar counting chamber, containing nine square millimeter ruled areas, and counting the total number of cells in the nine areas. Divide this figure by nine and multiply by ten, the depth of the chamber, and the result will be the number of cells per c. mm. of spinal fluid. The undiluted fluid is used, but in the case of only a slight blood contamination, a count may be made by diluting the fluid in a white blood pipette, using 3 per cent acetic acid colored with methyl violet and drawing the acid up to the 0.5 mark and the fluid to the 1.1 mark, then counting the number of cells in nine squares and multiplying by $7/6$ gives the result in cells per c. mm. of undiluted fluid. It was only necessary to use this last three times in connection with the examinations here reported.

(4) The fluid is now centrifuged at a constant low speed for five minutes.

This should be uniform for all examinations.

(5) The supernatant fluid thus obtained is withdrawn in a fine pipette until there is only one drop left in the bottom of the centrifuge tube.

This may be best done with a suck pump, but as there was none in the laboratory, a pipette with a large rubber bulb was substituted.

(6) The clear drop of fluid in the centrifuge tube is now agitated gently with a platinum loop until it becomes cloudy.

Care must be taken not to break the cells at the bottom of the tube in this process.

(7) Take small amounts of the fluid in loop and touch the loop to the slide. Do not smear the specimen thus obtained but place upon the slide several of these loopfuls. These will, if the loop is small, be seen to air dry in less than 30 seconds, and as any number of loopfuls may be placed on the slide, an ample specimen is obtained for examination.

Care should be taken to have the slides scrupulously clean.

(8) When the smear thus formed is dry, immediately place upon it two or three drops of absolute methyl alcohol, acetone free, and allow the smear to air dry again. This is complete in from three to five minutes, the breeze from an electric fan may here be usefully employed.

The smear is now ready for staining and most satisfactory results are seen as the cells are well preserved with abundant cytoplasm. The actual staining done after Giemsa's method is modified as follows:

(9) Four c. c. of distilled water are placed directly on the smear. This amount of water well covers the slide to the edges.

(10) Drop into this water on the slide seven drops of Giemsa's stock stain. There is now formed a metallic luster over this mixture on the slide, and the staining is allowed to continue for 30 minutes, gently rocking the slide from time to time.

(11) The stain is now washed off and washing continued for one hour and a half by placing the slide in a container of distilled water. This time varies, however, and may best be determined by a superficial examination of the smear under the high power. Sometimes one hour of washing proves sufficient.

(12) The smears should now be air dried (do not blot or use heat as this spoils the specimen) and set aside for examination under the oil immersion objective.

DESCRIPTION OF CELLS AND DISCUSSION.

The polymorphonuclear elements are normal but occur in only a very negligible per cent. Neutrophilic and basophilic granules occur in their cytoplasm.

The cells of the lymphocytic series characterize the bulk of the elements present. The nuclei of the lymphocytes present certain features of interest. At times these nuclei seem to contain vacuoles that give the ordinarily homogeneous nucleus a peculiar appearance. The vacuoles, sometimes very minute and sometimes quite large, do not take the stain but are at times clearly outlined by a pale blue margin. The outline of the nuclear membrane is, however, well preserved, and spherical in form.

In observing the picture presented, one is prone to think that this is a manifestation of some retrograde liquefactive process; but, on the other hand, one should consider the possibility that this appearance may be due to some substance phagocytized by the cell. It has been demonstrated that this is not a post-mortem change, as this phenomenon is not manifest until after the first week following an injection of the horse serum.

There is listed in the tables accompanying this report a type of cell as "undiagnosed." The term undiagnosed is a poor one to employ in this case because the cell is differentiated from a polymorphonuclear or eosinophile, but cannot be differentiated in the mononuclear or lymphocytic series. The cells listed under "undiagnosed" are all of the same type; namely, a cell which has entirely lost its cytoplasm, and whose large round nucleus contains many vacuoles. These nuclei do not stain the blue of the other mononuclear elements but appear a distinct purple in contrast, and as it is impossible to differentiate them from the lymphocyte, mononuclear leukocyte, endothelial cells or the nucleus of some other mononuclear body cell, it was decided to call them for the present "undiagnosed."

The eosinophiles that are seen in this examination can be considered typical. That is to say, they contain two nuclei and many red granules. These granules are sometimes large and sometimes small. They may be seen in compact masses or loosely in the cytoplasm.

In some cases one gets an impression that there may possibly be only one nucleus, as some cells appear to have only a small

crescentic-shaped nucleus pushed to one side of the cell; but with careful study, it may be demonstrated that this cell is shrunk and that there are two nuclei present together. In still other cases the nuclei appear round and centrally placed, the cell large and swollen. Careful examination in these cases shows either one nucleus is imposed upon the other, or evidence that there was another nucleus that has been displaced in the fixation and staining.

The tables accompanying this report are thought to be such that further explanation of them is unnecessary, but in conclusion let it be observed that the cells themselves present abnormal phenomena very suggestive of a retrograde process, that their form as seen under the microscope is easily distorted by extraneous influences and therefore the cytology of the spinal fluid in aseptic meningitis presents a problem which can only be answered by further careful study.

CASE 1.—D. G., age 22, single, white female. Admitted to psychopathic wards of Philadelphia General Hospital May 15, 1914, and regularly committed June 3, 1914, with a provisional diagnosis of dementia præcox (catatonic), which was confirmed at staff meeting August 17, 1918.

Course in Hospital.—On admission, mute, resistive, dull and apathetic. Refused food and expectorated everywhere. Later notes state she is incontinent, vile in habits, often masturbating openly. Silly and foolish in speech and action.

Treatment.—Given four intraspinal treatments at varying intervals of one to two weeks.

Result.—Nil.

CASE 2.—A. W., age 26, single, white female. Admitted to psychopathic department of Philadelphia General Hospital June 25, 1917, and regularly committed to Philadelphia Hospital for Mental Diseases July 12, 1917, with a provisional diagnosis of dementia præcox (hebephrenic), which was confirmed at staff meeting, November 11, 1919.

Course in Hospital.—On admission, childish, silly and spoke of "the blackhand," etc., in a vague manner. Later notes refer to her as being dull, apathetic and seclusive; at times very silly and foolish. Conversation irrelevant and incoherent and showed references to auditory and visual hallucinations.

Treatment.—Received five intraspinal injections.

Result.—Temporary improvement mentally. Brighter and answered questions relevantly. Three weeks after final treatment had relapsed into former condition.

CASE 3.—J. P., age 30, married, white female. Admitted to psychopathic ward of Philadelphia General Hospital March 4, 1919, and regularly com-

TABLE II.

LABORATORY DATA OF ASEPTIC MENINGITIS CASES STUDIED AT PHILADELPHIA
HOSPITAL FOR MENTAL DISEASES.

Name.	No. of Inj.	Date.	Sp. ct.	Poly.	Lymph.	Mono.	Eosin.	Undiag.	Remarks.
M. G.	(1)	7-12	4	..	..	..	..	..	(-) In column No. of Inj. indicates control observation.
	(2)	7-19	220	..	..	..	..	..
	(3)	7-28	84	6	82	2	..	10	
	(4)	8-2	135	4	89	2	..	7	
	(-)	8-9	..	..	..	..	..	..	No fluid obtained.
	(-)	8-15	..	..	..	..	..	..	No fluid obtained.
	(-)	8-23	80	2	97	..	1	..	
	(5)	8-30	40	1	98	1	..	..	Fluid congealed slightly.
J. T.	(1)	7-12	8	..	..	..	..	..
	(2)	7-19	40	..	..	..	..	..
	(3)	7-28	162	8	73	5	1	13	
	(4)	8-2	62	4	84	3	..	9	
	(-)	8-9	225	3	88	1	8	..	
	(-)	8-15	110	1	96	3	..	..	Fluid congealed in tube.
	(-)	8-23	13	..	89	2	9	..	Fluid congealed slightly in tube.
	(-)	8-30	..	..	..	..	..	..	Fluid very bloody.
P. M.	(1)	7-12	6	..	..	..	..	..
	(2)	7-19	45	..	..	..	..	..
	(3)	7-28	66	6	90	4	..	..
	(-)	8-2	93	5	81	2	..	12	
	(-)	8-9	53	4	94	2	..	..
	(4)	8-15	122	..	92	8	..	..	Fluid formed gelatine like cone in tube.
	(-)	8-23	41	..	98	1	1	..	Congeaed slightly in tube.
	(5)	8-30	86	1	96	1	2	..	
F. K.	(1)	7-12	6	..	..	..	..	..
	(2)	7-19	80	..	..	..	..	..
	(3)	7-28	92	8	85	6	1	..	
	(-)	8-2	63	5	84	3	1	7	
	(-)	8-9	26	1	95	2	..	2	
	(4)	8-15	40	..	94	6	..	..
	(-)	8-23	200	2	86	1	11	..	Fluid congealed slightly in tube.
	(-)	8-30	..	..	..	..	..	..	Fluid very bloody.
B. A.	(1)	7-12	5	..	..	..	..	..
	(-)	7-19	..	..	..	..	..	..
	(2)	7-28	104	3	87	9	1	..	
	(3)	8-2	90	7	77	2	..	14	
	(-)	8-9	340	..	95	3	2	..	
	(4)	8-15	245	2	94	2	2	..	
	(-)	8-23	..	..	..	..	..	..	No fluid obtained.
	(5)	8-30	144	1	98	1	..	..

TABLE II.—CONTINUED.

Name.	No. of Inj.	Date.	Sp. ct.	Poly.	Lymp.	Mono.	Eosin.	Undiag.	Remarks.
S. H.	(1)	7-12	2	..	..	..	..	..
	(-)	7-19	333	..	..	..	..	..
	(2)	7-28	183	1	95	4	..	..
	(3)	8-2	80	5	83	4	..	8	
	(-)	8-9	177	2	89	5	..	4	Congeaed slightly in tube.
	(4)	8-15	33	..	94	6	..	..
	(-)	8-23	112	..	98	2	..	..	Congeaed slightly in tube.
	(5)	8-30	84	..	99	1	..	..
J. R.	(-)	7-12	8	..	..	..	..	..
	(1)	7-19	4	..	..	..	..	..
	(2)	7-28	147	2	86	2	..	9%	
	(3)	8-2	255	4	81	4	..	11	
	(-)	8-9	226	1	85	4	10	..	
	(4)	8-15	150	..	98	..	2	..	Coagulated in threads in tube.
	(-)	8-23	130	1	85	11	3	..	Congeaed slightly in tube.
	(5)	8-30	144	2	97	1	..	..
A. I.	(-)	7-12	..	..	..	..	..	..	No fluid obtained.
	(1)	7-19	4	..	..	..	..	..
	(2)	7-28	131	3	79	3	1	15	
	(3)	8-2	71	4	91	1	..	4	
	(-)	8-9	240	..	95	2	2	1	Slightly coagulated in tube.
	(4)	8-15	150	..	98	1	1	..	
	(-)	8-23	91	2	97	1	..	..
	(5)	8-30	153	1	96	1	2	..	
D. G.	(1)	7-11	8	..	..	..	..	..
	(2)	7-18	40	..	..	..	..	..
	(-)	7-26	303	16	73	2	..	9	
	(3)	7-31							No cell count made.
	(-)	8-10	55	3	91	1		5	Congeaed slightly in tube.
	(-)	8-16	..	..	..	..	..	..	No fluid obtained.
	(-)	8-22	..	..	..	..	..	..	No fluid obtained.
	(4)	8-31	81	..	98	2	..	..
A. W.	(1)	7-11	4	..	..	..	..	..
	(-)	7-18	80	..	..	..	..	..
	(2)	7-26	390 ?	7	89	4	..	..
	(3)	8-1	..	..	..	..	..	..
	(4)	8-16	176	3	92	4	1	..	Congeaed slightly.
	(-)	8-22	420	3	83	4	10	..	Congeaed slightly.
	(5)	8-31	120	..	98	..	2	..	
J. P.	(1)	7-11	3	..	..	..	..	..
	(-)	7-18	40	..	..	..	..	..
	(-)	7-26	144	9	87	4	..	..

TABLE II.—CONTINUED.

Name.	No. of Inj.	Date.	Sp. ct.	Poly.	Lymp.	Mono.	Eosin.	Undiag.	Remarks.
J. P.	(-)	8-1	..	..	..	..	..	..	No examination made.
	(-)	8-10	140	3	92	4	1	..	
	(2)	8-16	12	1	97	2	..	..
	(-)	8-22	..	..	..	..	..	..	No fluid obtained.
	(3)	8-31	19	..	98	..	2	..	
E. G.	(1)	7-11	7	..	..	..	..	..
	(2)	7-18	182	..	..	..	..	..
	(-)	7-26	40	6	74	9	8	3	
	(-)	8-1	240	5	82	3	2	8	
		8-10							Treatment suspended.
		8-31	?						
M. M.	(1)	7-11	7	..	..	..	..	..
	(2)	7-18	70	..	..	..	..	..
	(-)	7-26	203	3	79	4	..	14	
	(3)	8-1	80	2	84	2	..	12	
	(-)	8-10	240	4	87	7	2	..	
	(4)	8-16	262	..	97	3	..	..	Congeaed slightly in tube.
	(-)	8-22	320	2	96	2	..	..	Congeaed slightly in tube.
	(5)	8-31	200	..	97	3	..	..
F. B.	(1)	7-11	9	..	..	..	..	..
	(2)	7-18	208	..	..	..	..	..
	(-)	7-26	159	6	85	8	1	..	
	(3)	7-31	..	..	..	..	..	..
	(-)	8-10	250	1	93	5	..	..
	(4)	8-16	257	..	99	1	..	..
	(-)	8-22	..	..	..	..	..	..	No fluid obtained.
	(5)	8-31	108	..	96	..	4	..	
S. G.		7-11	11	..	..	..	..	..
	(1)	7-18	4	..	..	..	..	..
	(2)	7-26	120	9	73	7	1	10	
	(3)	7-31	..	..	..	..	..	..
	(-)	8-10	38	5	80	8	..	7	
	(-)	8-16	30	1	95	4	..	..
	(-)	8-22	15	..	99	1	..	..
	(4)	8-31	50	..	98	1	1	..	
M. K.		7-11	13	..	..	..	..	..
	(1)	7-18	5	..	..	..	..	..
	(-)	7-26	30	..	..	..	..	..
	(2)	7-31	..	..	..	..	..	..
	(-)	8-10	120	4	88	6	2	..	
	(3)	8-16	41	1	96	3	..	..	Fluid congealed slightly.
	(-)	8-22	106	3	96	1	..	..
	(4)	8-31	30	1	99	..	..	..

mitted to Philadelphia Hospital for Mental Diseases March 28, 1919, with a diagnosis of dementia præcox (paranoid), which was confirmed at staff meeting August 16, 1919.

Course in Hospital.—Onset one year previous to admission. On admission, noisy and thought the devil was after her; the neighbors watched her and interfered with her affairs. Notes to time of treatment state she is quarrelsome, hostile and assaultive. Untidy, idle and reacts to hallucinations.

Treatment.—Only three treatments were given as patient was uncooperative. The first was given July 11, 1923, the second August 16, 1923, and the third August 31, 1923.

Result.—Still hallucinated and conversation irrelevant and incoherent, but patient is quiet, cleanly, has shown no hostility or assaultive tendencies and is not destructive. Had been on a "disturbed" ward; now on one of the best.

CASE 4.—E. G., age 33, married, white female. Admitted to psychopathic ward of Philadelphia General Hospital August 3, 1920, and regularly committed to Philadelphia Hospital for Mental Diseases September 3, 1920, with a provisional diagnosis of toxic psychosis which was changed to dementia præcox (paranoid), August 23, 1923, by the staff.

Course in Hospital.—On admission, suspicious and apprehensive; had delusions of food and medicine being poisoned. Later notes describe her as being noisy, excited, untidy, destructive and hallucinated.

Treatment.—Only two treatments were given this case as she developed a severe anaphylactic reaction. Treatments were therefore discontinued.

Result.—Nil.

CASE 5.—M. M., age 35, married, colored female. Admitted to psychopathic ward of Philadelphia General Hospital May 22, 1922, and regularly committed to Philadelphia Hospital for Mental Diseases September 27, 1922, with a provisional diagnosis and dementia præcox (paranoid). This diagnosis was confirmed at staff meeting October 4, 1922.

Course in Hospital.—On admission, assaultive, violent, excited, delusions of persecution based on ideas of reference and auditory hallucinations. Later notes describe her as being hallucinated, abusive and assaultive. Thought patients and attendants called her vile names, was irritable, obstinate and resented any interference. Untidy and refused to work.

Treatment.—Received five intraspinal injections at intervals of one to two weeks. Just previous to her second treatment, was found putting basins at the bedside of each patient receiving treatments. She said, "My Heavenly Father told me to do this. They will need them when they vomit."

Result.—Decidedly better institutional adjustment. Is now clean and neat; helps with the care of infirm patients and her conversation is much more relevant and coherent. She still speaks of her "heavenly father" but not to such an extent as formerly. She came from the most disturbed ward and is now in the best and enjoys ground parole. Has shown no irritability or assaultive tendencies.

CASE 6.—F. B., age 43, married, white female. First admission June 11, 1919; second October 22, 1920, and last October 10, 1922. A continuous process according to history and diagnosed in each instance as a case of dementia præcox (paranoid). This was confirmed at staff meeting January 29, 1923.

Course in Hospital.—On admission, expressed absurd, unsystematized delusions of persecution based on ideas of reference and auditory hallucinations. Notes through the course of her hospital life describe her as being mute (except to her relatives), resistive and persisted in removing her clothing. Told her relatives she was being poisoned and would be killed. Just prior to institution of treatment, was noted as being restless, excited, resistive and usually naked and filthy.

Treatment.—Received five intraspinal injections at intervals of one to two weeks.

Result.—Following her first treatment she talked to a certain extent and in a relevant manner. Since her final treatment she has been cleanly in her habits, keeps her clothes on and has helped with the ward work, though to a limited extent. She is still hallucinated however and at times mute. At other times answers are brief but relevant. Result in brief is a much improved institutional adjustment.

CASE 7.—S. G., age 19, single, white female. Admitted to psychopathic ward of Philadelphia General Hospital October 22, 1920, and regularly committed to Philadelphia Hospital for Mental Diseases November 5, 1920, with a provisional diagnosis of dementia præcox (paranoid). This diagnosis was confirmed at staff meeting November 19, 1920.

Course in Hospital.—On admission, excited, restless and loquacious. Told of seeing and hearing spirits. She improved and was paroled but soon returned in worse condition than ever. Since then she has been negativistic and mute at times; at other times, excited and quarrelsome. In 1923 was noted as being dull, apathetic and seclusive; talked to herself; rather untidy though cleanly in habits.

Treatment.—Received four intraspinal injections at intervals of from one to three weeks.

Result.—Temporary improvement but at present, September 3, 1923, has relapsed.

CASE 8.—M. K., age 29, married, white female. Admitted to psychopathic ward of Philadelphia General Hospital February 3, 1919, and regularly committed to Philadelphia Hospital for Mental Diseases April 1, 1919, with a provisional diagnosis of dementia præcox (catatonic). This diagnosis was confirmed at staff meeting November 30, 1921.

Course in Hospital.—On admission, mute, resistive and showed "cerea." Later became silly and foolish and expressed various somatic ideas. Became untidy, incontinent, mute, resistive and showed mannerisms.

Treatment.—Given four intraspinal injections, cooperating readily.

Result.—Cleanly in habits and appearance and cooperative, though still mute.

CASE 9.—M. G., age 23, single, male; admitted to psychopathic ward June 3, 1918, and regularly committed to Philadelphia Hospital for Mental Diseases June 28, 1918, with a provisional diagnosis of dementia præcox (hebephrenic) which was confirmed at staff meeting December 11, 1918.

Course in Hospital.—On admission, silly, foolish, evasive though admitted auditory hallucinations. Irrelevant and incoherent in conversation. At times hostile and threatening. In 1919 and 1920 unemployed, surly and abusive at times; at other times silly and foolish, laughing and grimacing. In 1921 and 1922, still unemployed; hallucinations and persecutory delusions prominent. In 1923 he was noted as being cleanly, working a little under supervision, evasive, suspicious and seclusive.

Treatments.—Given intraspinal injections at intervals of from one to two weeks. Following second injection he was noted as being more relevant in his answers to questions. Following third, fourth and fifth injections he showed marked mental improvement, gaining partial insight into his condition and realizing he was receiving treatments. Later notes describe him as being quiet and talking quite rationally and working on the ward. Still hallucinated.

Final Result.—Better institutional adjustment.

CASE 10.—J. T., age 20, single, white male, of Italian parentage. Admitted to psychopathic wards of Philadelphia General Hospital April 21, 1923, and regularly committed to the Philadelphia Hospital for Mental Diseases May 17, 1923, with the provisional diagnosis of dementia præcox (hebephrenic) which was confirmed at staff meeting May 25, 1923.

Course in Hospital.—On admission, attention hard to gain and difficult to retain; grimaces and occasionally smiles in a silly way. Later notes state he is cleanly, in bed, eating well, devoid of facial expression except when conversation is attempted, when he "throws his head and laughs." Later notes state he was given continuous baths, as he was assaultive without provocation. On July 10, just previous to treatments, he was silly and foolish in manner, answering most questions with silly laughter, though at times saying "yes" or "no." Was disoriented except for name, had no cares and did not want or even ask to go home.

Treatments.—On July 12, 1923, he received first intraspinal treatment, reacting quite violently physically. Mentally since the first and subsequent treatments, he showed marked improvement. Up and around the ward after his temperature had subsided and made himself extremely useful to the nurse. (Charge nurse stated he was worth any two attendants.) He was freely accessible, fully oriented, memory good for recent events. Claimed he did not remember some things mentioned occurring previous to treatments. Was allowed ground parole and never violated any of hospital regulations. Realized he had passed through a mental upset and states the treatments did him a great deal of good.

Final Result.—Paroled to the custody of his relatives September 12, 1923.

CASE 11.—P. M., age 18, single, white male. Admitted to psychopathic wards of Philadelphia General Hospital August 8, 1922, and regularly committed to Philadelphia Hospital for Mental Diseases August 23, 1922, with a provisional diagnosis of dementia præcox (catatonic). This diagnosis was confirmed at staff meeting March 16, 1923.

Course in Hospital.—On admission was superficially depressed, negativistic and mute. Cleared up and was paroled, but soon relapsed and had to be returned. Later notes state he was much over weight (gained 50 lbs. in two months). Talked fairly coherently and was without judgment and insight.

Treatments.—Given five intraspinal injections at intervals of one to two weeks.

Results.—Following second treatment, said "I must have been crazy or I wouldn't be here." Claims he does not remember events happening just previous to his commitment. Following his final treatment it was noted that he had lost a great deal of weight but was untidy and rather silly. At present, September 1, 1923, is much brighter, relevant, cleanly and works willingly.

Final Result.—Improved physical condition, possibly due to adjustment of endocrine system. Not much improvement mentally though he seems brighter and happier. Is to be paroled soon.

CASE 12.—F. K., age 19, single, white male, of Jewish extraction. Admitted to psychopathic wards of Philadelphia General Hospital August 24, 1922, and regularly committed to Philadelphia Hospital for Mental Diseases September 5, 1922, at which time a provisional diagnosis of dementia præcox (catatonic) was made. This diagnosis was confirmed at staff meeting November 22, 1922.

Course in Hospital.—On admission, mute, negativistic, and attitudinizing. Later he was noted as being silly, as a rule mute and displaying mannerisms. Just prior to treatment was noted as being up and about, idle, often grinning without cause and apparently deteriorating.

Treatments.—Given four intraspinal injections at intervals of one to two weeks.

Result.—Nil.

CASE 13.—B. A., age 24, single, white male. Admitted to psychopathic department of Philadelphia General Hospital May 3, 1920, and regularly committed to Philadelphia Hospital for Mental Diseases May 25, 1920, with a provisional diagnosis of dementia præcox (hebephrenic). This was confirmed by the medical staff February 1, 1923.

Course in Hospital.—In 1920 he was noted as being up and around the ward, superficially depressed, hostile, suspicious and negativistic. In 1921, untidy though not filthy; silly, foolish and laughs without provocation. Answers to questions are retarded and irrelevant. Poor cooperation, insight nil, judgment defective. In 1922, idle, unkempt, silly, foolish, noisy, destructive, incoherent and irrelevant. In 1923, silly and foolish, speech spontaneous, rambling and incoherent. Idle, filthy habits, noisy and destructive.

Treatments.—Given five intraspinal injections at intervals of one to two weeks. No particular change mentally but patient is quiet, cleanly and works on the ward; therefore, "Better institutional adjustment."

CASE 14.—S. H., age 40, married, colored male. Admitted to psychopathic department of Philadelphia General Hospital June 30, 1922, and regularly committed to Philadelphia Hospital for Mental Diseases August 15, 1922, with a provisional diagnosis of dementia præcox (catatonic). This was revised to dementia præcox (paranoid) at staff meeting December 7, 1922.

Course in Hospital.—In 1922 he was noted as being mute, resistive and showing cerea flexibilitas. Later the same year he was cooperative, though retarded in speech. Spoke of vague persecutions and reacted to auditory hallucinations.

Treatments.—Given five intraspinal injections at intervals of one to two weeks. His physical reactions to these were unusually severe; following the fourth treatment, volunteered the information that his head felt clearer, though he felt awfully sick. "I have not heard those voices since you put the needle in my back."

Results.—Temporary improvement. Developed insight into his condition, said "I just went out of my head, I guess." However, on September 16, 1923, sadly admitted to physician that the voices were bothering him again.

CASE 15.—J. R., male, age 22, single, Mexican (?). Admitted to psychopathic wards of Philadelphia General Hospital October 20, 1922, and regularly committed to the Philadelphia Hospital for Mental Diseases January 30, 1923, with a provisional diagnosis of dementia præcox (catatonic), the diagnosis was changed to dementia præcox (paranoid) at staff meeting April 11, 1923, as he had shown practically no symptoms referable to catatonic dementia præcox, but was definitely paranoid.

Course in Hospital.—On admission responses to questions were relevant but retarded and inadequate. He was apathetic, dull and listless and expressed persecutory delusions. Later notes describe him as being seclusive, apathetic and indifferent. Delusions of persecution based on ideas of reference and auditory hallucinations were elicited. Just previous to treatments he was noted as being hallucinated, the voices of patients and others call him vile names, even when alone. Idle though neat and clean in habits and appearance.

Treatments.—Given five intraspinal injections at intervals of one to two weeks.

Results.—Following the third injection he talked more freely than he ever had heretofore, stating that he was "afraid that if I talked, I would be put in prison, perhaps killed." Following treatments showed further improvement. Freely accessible, says "my head feels clearer now than it did." When questioned concerning his having had mental trouble said, "I had some head trouble, but I wasn't crazy." At present, September 17, 1923, is considered one of the best workers on the farm (never worked

while in hospital before) and talks fairly well in answer to questions. However, head farmer states he keeps to himself a great deal and talks to himself.

Final Result.—"Better institutional adjustment."

CASE 16.—A. I., age 38, married, white male. Admitted to psychopathic wards of Philadelphia General Hospital March 4, 1921, and to Philadelphia Hospital for Mental Diseases March 12, 1921, with a provisional diagnosis of dementia præcox (catatonic) which was confirmed at staff meeting February 7, 1923.

Course in Hospital.—On admission was mute, resistive, and showed cerea flexibilitas. Later notes describe him as being mute, resistive, and requiring tube-feeding. After a few months ate ravenously, grinned and muttered to himself; untidy and filthy. Lately he was noted as being mute, seclusive and stares vacantly into space.

Treatments.—Given five intraspinal injections at intervals of one to two weeks. Physical reaction very violent and he showed cutaneous reactions which were given routine treatment.

Results.—Now cleanly and works under supervision. No mental improvement.

Final Result.—"Better institutional adjustment."

CASE 17.—Y. G., female, age 29, admitted to Philadelphia General Hospital June 3, 1923, to Philadelphia Hospital for Mental Diseases June 14, 1923. A case of hebephrenic dementia præcox of ten years' duration. Silly, foolish, untidy, destructive, at times assaultive. Received four injections 20 c. c. each. After final treatment quieter, not assaultive nor as destructive; still silly and foolish. Final result, better institutional adjustment.

CASE 18.—R. B., female, age 26, admitted to Philadelphia General Hospital November 16, 1920, to Philadelphia Hospital for Mental Diseases January 10, 1921. A paranoid dementia præcox of one year's duration. Resistive, antagonistic, untidy, seclusive, hallucinated and deluded. Received five treatments. Improved for several weeks then relapsed into former state. Final result, nil.

CASE 19.—I. C., female, age 22, admitted to Philadelphia General Hospital December 14, 1920, to Philadelphia Hospital for Mental Diseases December 24, 1920. A case of dementia præcox, paranoid, of four years' duration. Ideas of poisoning and other delusions of persecution, conversation irrelevant and incoherent. Received five treatments. Answered questions lucidly but soon relapsed into former state. Final result, nil.

CASE 20.—R. H., female, age 20, admitted to Philadelphia General Hospital June 1, 1921, to Philadelphia Hospital for Mental Diseases June 15, 1921. A case of dementia præcox, hebephrenic, of six months' duration. Silly, foolish, destructive, untidy, hallucinations at times, does no work. Received five treatments. Is clean and neat in appearance and no longer silly and foolish. Still incoherent at times but helps with ward work. Final result, better institutional adjustment.

CASE 21.—E. L., female, age 24, admitted to Philadelphia General Hospital March 25, 1920, to Philadelphia Hospital for Mental Diseases May 10, 1920. A case of hebephrenic dementia præcox of two months' duration. Silly, foolish, untidy, hallucinated. Has excited periods and becomes assaultive. Received five treatments. Showed marked mental improvement but soon relapsed. Has had no excited periods since. Final result, slightly better institutional adjustment.

CASE 22.—B. M., female, age 38, admitted to Philadelphia General Hospital May 20, 1922, to Philadelphia Hospital for Mental Diseases July 14, 1922. A case of paranoid dementia præcox who is subject to delusions of persecution (unsystematized) based on ideas of reference and hallucinations. Previous to treatment was always disturbed, noisy, obscene and violent; never worked. Received four treatments. Much more agreeable, works hard and willingly. Only disturbed for short time while working. Mentally still paranoid. Final result, better institutional adjustment.

CASE 23.—C. McG., female, age 31, admitted to Philadelphia General Hospital October 28, 1921, to Philadelphia Hospital for Mental Diseases January 5, 1922. A case of catatonic dementia præcox of several months' duration. Mute, resistive, requiring tube feeding at times, untidy and filthy at times. Received one injection from which she nearly died, became cyanotic, pulse weak and rapid, respirations shallow, skin clammy and moist. Adrenalin, heat applications, etc., brought her around. Treatments discontinued. Final result, nil.

CASE 24.—E. O., female, age 26, admitted to Philadelphia General Hospital for Mental Diseases from Belle Vista Sanatorium on July 26, 1919, duration one year. A case of paranoid dementia præcox characterized by following symptoms: Negative, hostile, threatening, hallucinatory and deluded. Received four treatments. Now quiet and peaceful, fairly tidy but admits hallucinations and thinks she is being poisoned. Cares for her personal wants quite well but refuses to work. Final result, better institutional adjustment.

CASE 25.—O. McC., female (colored), age 24, admitted to Philadelphia General Hospital March 10, 1923, to Philadelphia Hospital for Mental Diseases April 20, 1923. A case of paranoid dementia præcox of three months' duration. Delusions of poisoning and thought she was pregnant, excited, hostile and actively hallucinated. Never worked but was tidy and cleanly in habits. Received four treatments. Quiet, friendly and works in occupational shop. Talks rationally but evasively as regards her troubles. Paroled and has been getting along nicely for several months. Final result, remission?

CASE 26.—C. N., female (colored), age 37, admitted to Philadelphia General Hospital July 21, 1923, to Philadelphia Hospital for Mental Diseases August 28, 1923. A case of hebephrenic dementia præcox. Symptoms, silly, foolish, untidy, evasive, hallucinated and at times excited and

violent. Given five treatments, has had no attacks of excitement since last treatment (two months ago). Is quiet, tidy and works on ward, still foolish and reacts to hallucinations. Final result, better institutional adjustment.

CASE 27.—A. M., female, age 30, admitted to Philadelphia General Hospital September 5, 1922, to Philadelphia Hospital for Mental Diseases January 2, 1923. On admission excited, hallucinated and deluded, often masturbates openly and unashamed. Diagnosed dementia præcox, paranoid. Received five treatments. Physical reaction in this case was not marked and final result was nil.

CASE 28.—M. S., female, age 16, admitted to Philadelphia General Hospital August 19, 1920, to Philadelphia Hospital for Mental Diseases September 13, 1920. Duration unknown, a case of hebephrenic dementia præcox with characteristic symptoms. Silly, foolish, confused, untidy, soils herself and is destructive. Given five treatments. More tidy and not so silly. Is working in occupational therapy class. Final result, better institutional adjustment.

CASE 29.—E. M., female (colored), age 31, admitted to Philadelphia General Hospital December 9, 1920, to Philadelphia Hospital for Mental Diseases December 24, 1920. A catatonic dementia præcox of several months' duration. Mute, resistive and shows cerea flexibilitas at times. Silly, foolish, untidy and indifferent. Given five treatments. Temporary improvement, but soon relapsed. Final result, no improvement.

CASE 30.—F. R., female (colored), age 28, admitted to Philadelphia General Hospital January 30, 1922, to Philadelphia Hospital for Mental Diseases February 24, 1922. A hebephrenic dementia præcox, of one month's duration. Silly, foolish, answers to questions slow and often irrelevant. Untidy, obstinate and stubborn, lately destructive. Received five treatments. After second treatment began helping around ward of her own accord, tidy in appearance and has ceased destructive tendencies. Still silly and often grins foolishly. Final result, better institutional adjustment.

CASE 31.—E. K., female, age 38, admitted to Philadelphia General Hospital, April 11, 1922, to Philadelphia Hospital for Mental Diseases May 10, 1922. A case of paranoid dementia præcox of eight months' duration. Excited, violent and destructive, delusions of persecution based on ideas of reference and hallucinations. Received four treatments, at first showed no change but showed violent physical reaction to serum. At the present time quiet, answers questions relevantly and has shown no assaultive tendencies. On a quiet ward and has ground parole which she has not abused (formerly a runaway). Still hallucinated, says "the people are always bothering me and call me bad names." Final result, better institutional adjustment.

CASE 32.—C. B., female, age 36, admitted to Philadelphia General Hospital February 16, 1922, to Philadelphia Hospital for Mental Diseases

February 28, 1922. A paranoid dementia præcox of three years' duration, suspicious, apprehensive, delusional and hallucinatory. Apparently much deteriorated. Received five treatments without much physical reaction. At the present time is more contented, but paranoid in her attitude and admits hallucinations. Final result, practically nil.

CASE 33.—M. McN., female, age 31, admitted to Philadelphia General Hospital February 21, 1922, to Philadelphia Hospital for Mental Diseases, July 13, 1922. A case of hebephrenic dementia præcox of six months' duration. Silly, foolish, apathetic, dull and hallucinated both auditory and visual. Received five treatments with intense physical reaction. At the present time quiet, cooperative, sometimes speaks of her own volition, a thing she never did before. Is tidy, works on ward and in occupational class and shows marked mental improvement. Final result, remission?

CASE 34.—J. V., white male, age 34. Admitted to Philadelphia General Hospital May 8, 1923, to Philadelphia Hospital for Mental Diseases July 5, 1923. A case of paranoid dementia præcox of one year's duration. Symptoms: At times violently excited, requiring restraint; delusions of persecution—"the black hand are trying to kill me." Talks and laughs to himself actively hallucinated. Rambling and incoherent chatter. Given five treatments, physical reaction being marked. Since third treatment, quiet, orderly and cleanly; works well on the ward (never worked previously). Said "What is the matter with my head?" Final result, better institutional adjustment. Still paranoid though milder form than previously.

CASE 35.—J. T., white male, age 20. Admitted to Philadelphia General Hospital April 1, 1923, to Philadelphia Hospital for Mental Diseases May 17, 1923. A case of hebephrenic dementia præcox of four months' duration. This case was treated in the first series, had a good remission, went home for two months and was returned to the hospital, confused, silly, irrelevant and incoherent. Showed mannerisms, was destructive and impulsive. Is again in a remission, quiet, orderly and helps with the ward work. He is more silly and foolish than during the first remission. He is now working on the ward and in the occupational shop. Final result, remission.

CASE 36.—H. M., white male, aged 22. Admitted to Philadelphia General Hospital June 27, 1923, to Philadelphia Hospital for Mental Diseases July 24, 1923. A case of catatonic dementia præcox of four years' duration, symptomatized by negativism, muteness, destructiveness and periodic excitement. Given five treatments with but little effect. Talked coherently and appeared to know what he was doing, but soon relapsed. Final result, nil.

CASE 37.—I. A., Jewish, aged 23. Admitted to Philadelphia General Hospital February 1, 1922, to Philadelphia Hospital for Mental Diseases March 29, 1922. A case of catatonic dementia præcox of two months' (?)

duration. Symptoms: Mute, resistive, refused food and showed cerea flexibilitas. Given four treatments without any result. Physical reaction mild. Final result, nil.

CASE 38.—R. K., white male, age 29. Admitted to Philadelphia General Hospital March 7, 1922, to Philadelphia Hospital for Mental Diseases March 24, 1922. A case of paranoid dementia præcox of several months' (?) duration. Symptoms: Resistive, negative, seclusive, at times assaultive in reaction to tormenting hallucinations. Given five treatments. Is much brighter, talks and laughs quite normally, cheerful and helps willingly with hard work. Had formerly been regarded as a dangerous patient. His parents regard him as cured. Final result, remission.

CASE 39.—F. K., white male, age 45. Admitted to Philadelphia General Hospital July 29, 1923, to Philadelphia Hospital for Mental Diseases September 21, 1923. A case of catatonic dementia præcox of unknown duration. Symptoms: Mute, resistive and negativistic. At times shows cerea flexibilitas; at other times mutters to himself. Admits hallucinations of hearing. Given four treatments. For a short time showed considerable improvement but has relapsed. Final result, nil.

CASE 40.—F. H., white male, age 22. Admitted to Philadelphia General Hospital October 5, 1923, to Philadelphia Hospital for Mental Diseases October 23, 1923. A case of catatonic dementia præcox of several weeks' (?) duration. Symptoms: Mute, resistive, and negative. Filthy in habits and very destructive. A "runaway." Given five treatments without a particle of improvement; in fact, grew worse. Final result, nil.

CASE 41.—F. F., white male, age 35. Admitted to Philadelphia General Hospital May 26, 1922, to Philadelphia Hospital for Mental Diseases June 5, 1922. A case of catatonic dementia præcox of several months' duration. Symptoms: Retarded, at times mute and resistive; has seen and talked with his mother who is dead. Requires tube-feeding for weeks at a time. Received five treatments. Following third treatment, talked normally, stating that his head felt "fresher" and that he was much better. Still somewhat retarded at times, but eats of own volition and cares for his own wants very well. Works well under supervision. Final result, remission.

CASE 42.—H. Y., white male, age 34. Admitted to Philadelphia General Hospital March 3, 1923, to Philadelphia Hospital for Mental Diseases May 24, 1923. A case of paranoid dementia præcox of several years' duration. Formerly in Norristown State Hospital. Symptoms: Seclusive, paranoid, hallucinated and very fearful. Given four treatments. For a time appeared much better; talked coherently about his former ideas and hallucinations, laughing about them, but suddenly relapsed and became violent and homicidal in his actions. Final result, nil.

CASE 43.—T. S., white male, age 23. Admitted to Philadelphia General Hospital June 11, 1923, to Philadelphia Hospital for Mental Diseases July 7, 1923. A case of paranoid dementia præcox of two years' duration. Expressed delusions of a persecutory nature based on ideas of reference and hallucinations, both auditory and visual. Had impulsive tendencies toward violence. Received five treatments. For a time reacted very well, talked normally, worked willingly and showed marked improvement, both mentally and physically. About a month after final treatment began to relapse and is now (May 27) about the same as formerly. Has shown no assaultive tendencies. Final result, nil.

CASE 44.—B. S., white male, age 19 years. Admitted to Philadelphia General Hospital February 7, 1923, to Philadelphia Hospital for Mental Diseases March 29, 1923. A case of catatonic dementia præcox of four months' duration. At times excited, violent and noisy; then again, mute, resistive and negative. Given four treatments. Physical reaction mild. Since treatments, has been quiet but talks only in monosyllables, is seclusive and does not employ himself. Final result, slight improvement.

CASE 45.—B. S., white male, age 37. Admitted to Philadelphia General Hospital May 8, 1923, to Philadelphia Hospital for Mental Diseases June 5, 1923. A case of paranoid dementia præcox of five to six years' duration. Symptoms: Delusions of persecution, peculiar mystic ideas, good grasp on surroundings, seclusive, refuses to work. Given four treatments without any apparent result. Final result, nil.

CASE 46.—L. F., male (colored), age 15. Admitted to Philadelphia General Hospital December 13, 1922, to Philadelphia Hospital for Mental Diseases December 27, 1922. A case of hebephrenic dementia præcox of several (9) months' duration. Symptoms: Simple, silly and foolish; sees spirits and hears voices. Often covers head with sheet or his coat. Irrelevant, rambling speech. Given five treatments. Showed temporary mental improvement, became cleanly, answered questions quite relevantly, clean and neat, but soon relapsed. Final result, nil.

CASE 47.—J. C., a Jewish boy of 20. Admitted to Philadelphia General Hospital February 17, 1918, to Philadelphia Hospital for Mental Diseases March 21, 1918. A case of hebephrenic dementia præcox of only a few weeks' duration. Symptoms: Silly, foolish and untidy. Excited, hallucinated and deluded. Seclusive, dull and apathetic, usually mute. Given four treatments. Became brighter, answered questions in monosyllables, more tidy in appearance. This condition has continued but he refuses to work. Final result, slight mental improvement.

CASE 48.—C. O., an Italian male, age 29. Admitted to Philadelphia General Hospital April 28, 1923, to Philadelphia Hospital for Mental Diseases June 22, 1923. A case of paranoid dementia præcox of two months' duration. Symptoms: Delusions of persecution (poisoning) accompanied with great apprehension, ideas of reference and auditory hallucinations. Is

seclusive, idle and at times refuses to answer in English, though well able to do so. Given four treatments, reacting violently. Is much brighter, converses readily and is working in the tailor shop. Denies hallucinations and delusions at the present time, though admitting former voices. Final result, remission.

CASE 49.—J. K., white male, age 37. Admitted to Philadelphia General Hospital April 20, 1923, to Philadelphia Hospital for Mental Diseases May 31, 1923. A case of paranoid dementia præcox of five years' standing. Symptoms: Delusions of persecution, absurd and unsystematized, based on ideas of reference and hallucinations, both visual and auditory. Is idle, seclusive, untidy and appears deteriorated. Given one treatment from which the reaction was very severe, temperature continuing for seven days with headache, generalized weakness, anxiety, low blood pressure, etc. It was thought best to discontinue treatments. He was later paroled to the care of his sister. Condition, unimproved.

CONCLUSIONS.

1. The injection of sterile inactivated horse serum into the spinal canal produces an aseptic meningitis with marked physical reactions.

2. That the mental condition of 66 per cent of cases of dementia præcox so treated show improvement which has lasted from 2 to 11 months, several enjoying remissions. Insight is often gained.

3. That a fundamental principle not yet fully determined is involved, the further investigation of which may throw much light on the etiology of dementia præcox.

BIBLIOGRAPHY.

1. Aseptic Meningitis in Combating Dementia Præcox Problem. Carroll, New York Medical Journal, October 3, 1923.
2. A Few Demonstrations of Pathology of the Brain and Remarks on the Problems Connected with Them. Meyer.
3. A Pathological Study of Experimental Meningitis from Subarachnoid Inoculation. Rockefeller Institute Monograph No. 12, Ayer, March 25, 1920.
4. An Anatomical Consideration of the Cerebro-Spinal Fluid. Weed, The Anatomical Record, Vol. 12, No. 4, May, 1917.
5. Semana Med., Vol. 20, Part 2, pp. 1393, 1913, J. J. Vitton.
6. Trans. Choroidal Therapy in Neuro-Syphilis: Preliminary Report, Dowman, Jour. Med. Assn. of Ga., Vol. XI, No. 7.

DISCUSSION.

DR. HENRY A. COTTON.—It was very gratifying indeed to hear this paper and to feel that someone else is a therapeutic optimist. I had Dr. Carroll's reprint some months ago and in taking up the matter with our bacteriologist, Dr. John F. Anderson, we found there was a logical explanation for his success. Dr. Anderson's explanation was that the foreign protein injected in the body had a tendency to neutralize the toxins. As we have demonstrated that the functional mental disorders are the result of cerebral toxemia from chronic sepsis, this method of treatment seemed to us a valuable supplement to our own methods. It is possible that the toxemia in the central nervous system is not eliminated promptly, in some cases, after the elimination of the source of chronic sepsis.

Our experience with the treatment of chorea would also tend to corroborate this theory. In these cases the patient's own blood serum is injected in the spinal canal and frequently in less than 24 hours the symptoms will disappear. Of course, it is necessary in these cases to clean up the sources of infection. We have considered our sources of infection rather remote from the central nervous system. It may be possible that the infection lies nearer to the nervous system than we have believed, further that the infection may travel along the lymph channels or nerve sheaths, and finally reach the meninges. We do not find the bacteria in the central nervous system, but we will have to consider, in some cases at least, that the infection is in adjacent tissues. Therefore, the observation of the horse serum through the meninges would materially affect this adjacent infection.

The meningeal irritation is produced by the horse serum with desquamation of the cells producing an aseptic meningitis. There are several dangers to guard against. Dr. Barr is to be congratulated upon the fact that he has not had any serious results from this procedure. As we have been using intraventricular and intraspinal injections in the last 10 years, we did not consider it a serious matter. We thought our technique was sufficiently perfected to take care of this new work and we followed the same methods as we had been using for years. However, we had four cases of staphylococcus meningitis.

There are two possible explanations for the meningitis. One is possible staphylococcus bacteriemia, which I think is rather remote. The other explanation is possible contamination in giving the serum. When you introduce sterile horse serum without preservative into the canal you are furnishing a very good medium for bacterial growth and it may be necessary to add preservative (tricresol) to the serum. Since we have changed our technique, by not allowing the serum to come in contact with the air, we have had no more meningitis. Dr. Barr thinks one cannot get the same reaction with the preservative added to the horse serum as with sterile horse serum without preservative. I think, however, that this question should be thoroughly considered.

Now as to our results. We took the same type of case reported by Dr. Barr. These cases were of long duration and our first series were not so very satisfactory, but the next series, however, proved to be different. We took some chronic maniacal types which had been in the hospital some years and which had been isolated because of excited and destructive tendencies. After the first two of three treatments they became quiet and adjusted themselves to the hospital environment.

We have had very good results so far with this treatment and we believe that it is especially valuable in connection with our work of clearing up foci of chronic sepsis. We do not believe that the results would be permanent without the removal of other chronic foci of infection.

The following case illustrates the importance of this treatment as supplementary to our work:

"G. M., age 23 years, single. Negative family history. Personal history not unusual. Measles at the age of 7, followed by gastritis. Was graduated from college at the age of 21 as chemist. Was taking a post-graduate course in chemical engineering at the time of the onset of his mental trouble. Since the age of 15 has had frequent bilious attacks and for the last year or so persistent constipation. In January, 1922, had difficulty in concentrating, thought he would have to give up work. In April had a confused attack while going to call on a young woman. Got off the train two stations before destination, walked aimlessly around and then returned home, complaining that something unusual had happened to him. Later developed ideas of self-accusation, was depressed, tried to commit suicide. He was taken to the Hartford 'Retreat' where he was mute and showed typical catatonic syndrome. Had to be fed through a tube for two months.

"Admitted to the State Hospital, Trenton, June 29, 1922, 'Was mute, resistive, confused and refused to cooperate. Very impulsive, would bang his head against the windows and received severe lacerations of the scalp. He was unable to answer questions. Diagnosis made at Hartford and confirmed at this hospital was 'catatonic dementia præcox.'

"Three teeth were extracted July 4, 1922, and tonsils were removed July 10, 1922. He was given stomach vaccines, also anti-colon and streptococci serum on two occasions. Later vesiculectomy was performed. Patient emerged from a mute, catatonic state, into a hypomanic condition and this continued for a period of 18 months, at times becoming pronouncedly manic. At times destructive, tearing up his clothing.

"On January 30, 1924, 18 months after the colectomy, he was given his first Carroll treatment and a week later given the second. He remained in bed, resting quietly, and in a few weeks gradually recovered so that he was able to leave the hospital May 3, 1924, as recovered."

Possibly this case would have recovered without using the serum, but the recovery following the serum is certainly significant.

We have been studying the sugar content in the spinal fluid in these cases. We found that in such cases before treatment the content was much higher than normal and after each successive treatment the sugar content

decreased to normal, usually about one point at a time. This observation has been made in a number of our cases and we believe it is important.

Further, we do not believe that treatment should be limited to chronic deteriorated cases. Undoubtedly some of the acute, maniacal cases can be benefited as we have found with this treatment. The treatment should be developed further and we would recommend it to institutions who are interested in doing something for their patients.

In closing I want to remind the members that we are planning a demonstration at the State Hospital on Saturday and I hope as many as can come will do so. Our methods of detoxication of the psychotic individual have been in use now for over six years and no one has disproven our work. Our facts remain uncontroverted and it is a source of pleasure to state that other institutions which have conscientiously used our methods are reporting the same results so our work has passed the experimental stage.

When our first report was made in 1919 the criticism, which was justified, was that we had not waited long enough to see the results of the work. Now, after six years, we feel that enough time has elapsed to determine whether or not our results have been permanent. During this time we have discharged as recovered 1600 cases in the functional group. This represents an average of 87 per cent of the admissions in this group during six years. The average spontaneous recovery rate prior to 1918 was 37 per cent, so this is a gain of 50 per cent in our discharge rate. Aside from 1602 cases we have discharged as unimproved 64, transferred to other hospitals 162, died since leaving the hospital 109, returned and still in our own hospital 75, so we have only considered in the 1602 cases those who today are recovered.

These cases are all investigated once or twice a year by after-care workers and it is important to note that our statistics are made up from the condition of the patients today and not when they leave the hospital. This 50 per cent increase in the recovery rate has resulted in a saving of \$690,000 to the state in the last five years. We now have 660 patients less than we would have had without this treatment. These are facts which should claim the attention of this Association and I would ask those who are interested to investigate the work for themselves and not be influenced by prejudiced opinion of those who have never visited the hospital and do not know what we are doing.

DR. BARRY.—When we first started this work, we were very skeptical but the first 16 cases were conducted with such good results that we decided to continue the treatments. However, we came to the conclusion that it would be absolutely necessary to make a thorough physical examination especially as regards the lungs as we felt that since one case died of pulmonary tuberculosis (some months after treatment), still we thought that tuberculosis was at least hastened by the intraspinal treatment. The next thing I would like to emphasize in this treatment, we think we have obtained some very good remissions, but particularly as regards institu-

tional adjustment, the improvement has been quite marked. Out of 48 cases, 49 (one man received two series of treatments) there were 21 who could be described as being markedly destructive, some assaultive, some filthy, and some who did not work. Of these 48 cases, 21 showed decided improvement. There were at least six cases taken from the worst building on the female side and eight cases from the male side, and we figured that due to the serum treatments, that possibly hundreds of dollars worth of institutional material such as linens, mattresses and furniture had been saved for the city. I think this has a decided bearing, especially when it is brought to the attention of your Board of Managers. Also, it is a saving in the number of attendants and nurses required for care for these excited, disturbed patients and they can be removed to other wards where they can be used to better advantage.

Then again, these cases being of an assaultive type there are a lessened number of injuries to report and that, it seems to me is quite important.

I feel these cases should be studied further and that after a year or so, they should be reported again.



PSYCHIC MANIFESTATIONS IN CASES OF BRAIN TUMORS.*

By FREDERICK P. MOERSCH, M. D.,

Section on Neurology, Mayo Clinic, Rochester, Minnesota.

It is common knowledge that practically all patients afflicted with brain tumor have mental symptoms at some period of the disease, that such symptoms are extremely variable, and that marked fluctuations may occur in any given case. The question naturally arises, are the psychic phenomena accompanying brain tumors worthy of study, will they serve as an aid in diagnosis, and if so, is there any method of conducting such an inquiry?

Any plan for the study of the mental status in cases of brain tumors is attended with innumerable difficulties. Four problems are presented: (1) the location of the tumor, and whether or not the same plan will serve for the study of the cerebellar tumor as for the frontal; (2) the time in the development of the tumor at which the patient is seen; (3) is the observation made during a period of quiescence or during a period of marked mental disturbance, and (4) the type of lesion, whether circumscribed or diffuse, and slowly or rapidly growing.

In the entire series of cases of brain tumor observed in the Mayo Clinic, the psychic phenomena have not been uniformly investigated and accurate percentages cannot, therefore, be given. However, 239 cases were reviewed in which fairly accurate records of the mental status have been made. These tumors were chiefly of the cerebrum, especially the forward portions; they do not represent the relative frequency of tumors for any given area (Table 1). While practically all of these patients, at some time or another, exhibited mental changes, 73 of them exhibited very definite mental changes during some stage of the disease (Table 1). In the 73 cases various types of mental phenomena are represented. It may be noted that the majority of tumors are in the anterior and middle

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

fossa, which may be accounted for, in part, by the greater frequency of lesions in these regions as compared to the posterior fossa, and by the fact that patients with mental symptoms were especially selected for study. In most cases the psychic phenomena

TABLE 1.
TUMORS OF THE BRAIN.

Location	Total cases	Cases with definite mental changes
Right frontal	37	20
Left frontal	30	10
Bilateral frontal (corpus callosum)	7	7
Right fronto-motor	19	4
Left fronto-motor	23	5
Right parietal	11	1
Left parietal	19	1
Right temporosphenoidal	8	2
Left temporosphenoidal	12	6
Right occipital	3	1
Left occipital	1	
Left temporoparieto-occipital	1	1
Corpus striatum	1	1
Pituitary	26	6
Pineal	1	1
Third and fourth ventricle	3	2*
Basal	4	3
Corpora quadrigemina	1	
Acoustic	7	1
Pons	7	
Cerebellar	17	1
Medullary	1	
Total	239	73

* Third ventricle.

were purely generalized, such as listlessness, indifference, anxiety, mental and physical let-down, dullness, mild apathy, or late stupor. In 39 cases the mental symptoms were rather marked. The location of the lesion and some of the more important associated factors are shown in Table 2. Observations were made at various times in the course of the disease, and it should be remembered that the mental phenomena fluctuate much more than do the neurologic signs.

TABLE 2.

SUMMARY OF THIRTY-NINE CASES OF BRAIN TUMOR WITH DEFINITE PSYCHIC MANIFESTATIONS.

Case.	Location of tumor.	Patient's chief complaint.	Relative diagnosis.	Duration of entire illness.	Headaches.	Swelling of fundi, dioptrics.	Other eye findings.	Convulsions.	Palsies.	Degree of mental change.	First symptom.	Early diagnosis.	Remarks.
A121967	Corpus callosum, bilateral frontal.	Forgetfulness.	Mental condition.	3 to 4 months.	Generalized.	..	None.	None.	None.	Marked.	Memory defect.	Presenile psychosis.	Died following glioma of corpus callosum.
A298355	Corpus callosum, bilateral frontal.	Loss of bladder and bowel control.	Mental state. Loss of bladder and bowel control.	4 months.	None.	..	None.	None.	None.	Very marked.	Lack of ambition.	1. Syphilis. 2. Brain tumor.	Died following glioma of corpus callosum.
A315952	Corpus callosum, bilateral frontal.	"Spells."	Convulsions.	3 years.	Generalized; later frontal.	5	Failing vision.	Convulsive attacks.	None.	Moderate.	Nocturnal convulsions.	Epilepsy.	Died following glioma of corpus callosum.
A197066	Corpus callosum, bilateral frontal.	Headaches.	"Losing his mind."	14 months.	Generalized.	3 to 4	Failing vision.	One unconscious attack.	None.	Marked.	Headaches and mental change.	"Losing his mind."	Died following glioma of corpus callosum and frontal lobes.
A260055	Corpus callosum, bilateral frontal.	Lack of ambition.	Mental state.	3 years?	Bilateral frontal.	1 to 2	None.	Two convulsive attacks.	None.	Variable; later marked.	Convulsive attacks.	1. Syphilis. 2. Encephalitis.	Died following bilateral frontal glioma.
A339951	Corpus callosum, bilateral frontal.	Tumor on head.	Tumor on head.	5 years?	Frontal.	3	Failing vision.	None.	None.	Moderate.	Tumor of forehead; headaches.	Tumor of skull.	Died following enucleation of endothelioma invading both frontal lobes.
A64088	Corpus callosum, bilateral frontal.	Headaches.	Headaches.	1 year.	Frontal and bridge of nose.	6 to 7	Blind.	None.	None.	Mild, headaches marked.	Headaches.	1. Syphilis. 2. Encephalitis.	Died following endothelioma attached to cribiform plate.
A377644	Right frontal.	Mental condition.	Mental condition.	4½ months.	Frontal (moderate).	2 to 3	No blurring.	Three unconscious attacks.	None.	Marked.	Unconscious attack.	Mental state.	Died following glioma of right frontal lobe.
A349406	Right frontal.	Weakness and loss of ambition.	Depression.	2 years.	General.	2 to 3	No blurring.	None.	Some weakness of left side.	Marked.	Loss of ambition.	1. Psychosis. 2. Arteriosclerotic dementia.	Operation negative. Committed suicide. No necropsy.
A140168	Right frontal.	Headaches.	Mental state.	6 months.	Frontal and occipital (late).	..	None.	Nervous spells?	None.	Marked.	Mental change.	1. Psychosis. 2. General paralysis.	Died following right frontal sarcoma.

TABLE 2.—CONTINUED.

Case.	Location of tumor.	Patient's chief complaint.	Relative's diagnosis.	Duration of entire illness.	Headaches.	Swelling of fundi, dioptrics.	Other eye findings.	Convulsions.	Palsias.	Degree of mental change.	First symptom.	Early diagnosis.	Remarks.
A37470	Right frontal.	Headaches and convulsions.	Headaches and convulsions.	9 months.	Frontal and occipital.	..	Slight blurring of discs.	General and petit mal?	None.	Slight: gradually marked.	Headaches; convulsions.	Compensation neurosis.	Died following right frontal lobe.
A451948	Right frontal.	Limp in left leg.	Nervous condition.	2 years.	Vertex (late).	3	Blurring vision.	None.	Slight weakness of left side.	Marked.	Lassitude; left-sided awkwardness.	Mental state.	Living following operation for glioma of right frontal lobe.
A337020	Right frontal.	Nervous spells.	Nervous spells.	4 years.	Right frontal occipital and temporal.	3	No blurring.	Jacksonian attacks.	Late weakness of left side.	Moderate.	Convulsions.	Psychoneurosis.	Died in convulsions following operation for glioma.
A369116	Right frontal.	Headache; bulging of right eye.	Headache; bulging of right eye.	15 months.	Right orbit and forehead.	..	Choked discs; failing vision.	Unconscious attacks.	None.	Moderate (later marked).	Headaches.	Orbital tumor.	Died following endothelioma of right orbit and frontal lobe.
A115495	Right frontal.	Headache.	Headache and mental state.	2 years.	Bilateral occipital.	..	Blurring and blind spells.	Unconscious attacks (late).	Late weakness of left side.	Very marked.	Headaches.	Brain tumor.	Died following glioma of right frontal lobe.
A351224	Right frontal.	None.	Mental change.	5 years.	Right frontal.	..	None.	Occasional generalized convulsions.	Weakness of left side.	Marked.	Mental change.	1. Epilepsy. 2. Syphilis.	Died following glioma of right frontal lobe.
A203726	Right frontal.	Headaches.	Headaches.	2 months.	Mid-frontal.	1 to 2	....	None.	None.	Marked.	Headaches.	Lesion of frontal lobe.	Abscess of right frontal lobe.
A399494	Left frontal.	Headaches.	Headaches.	4½ years.	Marked (chiefly vertex).	3	Blurring of vision.	None.	None.	Slight.	Headaches.	Recovered?	Living following glioma of left frontal lobe.
A277900	Left frontal.	Headaches.	Headaches and mental state.	2 years.	Left frontal.	3	Blurring of vision.	None.	None.	Very marked.	Mental state and forgetfulness.	Mental state.	Died following glioma of left frontal lobe.
A447460	Left frontal.	Headaches.	Mental state and headaches.	18 months.	Seldom.	..	Slight blurring of discs.	None.	None.	Very marked.	Mental change.	Depression.	Living following glioma of left frontal lobe.
A317080	Pituitary (third ventricle).	Ptosis of right lid.	Ptosis of right lid.	10 months.	Frontal headaches.	..	Some pallor of discs with partial bitemporal hemianopsia.	None.	Ocular palsies; weakness of left side.	Moderate.	Ptosis of right lid.	1. Syphilis of central nervous system. 2. Encephalitis.	Died following pituitary tumor with extension to base and third ventricle.
A347201	Pituitary (third ventricle).	Failing vision.	Failing vision.	2 years. 4 months.	General (slight).	..	Pallor; failing vision. Changes in field.	None.	None.	Marked (especially late).	Failing vision.	1. Pituitary tumor. 2. Encephalitis.	Died following basal glioma with extension to pituitary and chiasmatal region.

basal glioma with extension to pituitary and chiasmatic region.

vision.

(especially late).

ing vision. Changes in field.

(slight).

years. 4 months.

vision.

vision.

(third ventricle).

Case.	Location of tumor.	Patient's chief complaint.	Relative's diagnosis.	Duration of entire illness.	Headaches.	Swelling of fundi, diopeters.	Other eye findings.	Convulsions.	Palsies.	Degree of mental change.	First symptom.	Early diagnosis.	Remarks.
A443599	Right fronto-motor.	Convulsive attacks.	Convulsive attacks.	6 months to operation, 3½ months.	Frontal and vertex.	2	Blurring of vision.	Jacksonian.	None.	Moderate.	Headache convulsion.	1. Hysteria. 2. Syphilis.	Partial removal of glioma of right fronto-motor. Alive and improved.
A445147	Right fronto-motor.	Weakness.	Left hemiplegia; mental condition.		General.	..	Blurring of vision.	Jerkings of left side.	Weakness of left side.	Gradually increasing. Later marked.	Weakness of left side. Mental change.	Hemorrhage with right motor cortex.	Died following carcinoma of right parietal lobe. Hemorrhage of right fronto-motor area.
A293010	Left fronto-motor.	"Fits."	"Fits."	4 years.	Moderate.	1 to 2	Blurring of vision.	Jacksonian.	None.	Moderate.	Convulsions.	Epilepsy.	Removal of left fronto-motor endothelium. Alive and some improvement.
A413378	Right temporal (temporo-sphenoidal).	None.	Headaches.	6 months.	Right temporal.	5	Blurring of vision.	None.	Incoördination of left side.	Very marked (stupor).	Emotional headaches.	Encephalitis.	Died following glioma of right temporal lobe.
A352250	Right temporal (temporo-sphenoidal).	None.	Mental state.	2 years?	Generalized.	..	None.	None.	Late weakness of left side.	Very marked.	Mental state.	Dementia præcox.	Died following multiple abscess of right temporal lobe.
A352929	Left temporal (temporo-sphenoidal).	Unconscious attack.	Unconscious attack.	6 months.	General (late).	..	None.	Jerkings of right side; generalized convulsions.	None.	None until last week, stupor.	Unconscious attacks. Parasthesias of right side.	Brain tumor.	Died following glioma of left temporal lobe.
A183119	Left temporal lobe (temporo-sphenoidal).	Feels poorly.	Mental state.	4½ months.	None.	..	None.	Convulsive attacks of right side.	None.	Marked.	Convulsive attacks, mental confusion.	Mental confusion.	Died following glioma of left temporal lobe.
A186593	Left temporal lobe (temporo-sphenoidal).	Nervousness.	Brain tumor.	1½ years.	Rare.	3	Hemianopsia.	None.	Weakness of right side of face.	Marked.	Irritability?	?	Died following glioma of left temporo-sphenoidal area.
A406445	Left temporal lobe (temporo-sphenoidal).	Headaches.	Brain tumor.	3 years.	Occipital and right frontal.	4 to 5	Failing vision.	Convulsion.	None.	Moderate.	Convulsions.	Brain tumor.	Died following of cystic glioma left temporo-parietal area.
A381244	Left temporal lobe (temporo-sphenoidal).	Disturbance of speech.	Mental state.	15 months.	Rare.	3	Neuro-retinitis.	"Stroke."	None.	Marked (aphasia).	"Stroke."	1. Syphilis? 2. Arterio-sclerosis.	Died following glioma of left temporal lobe.

TABLE 2.—CONTINUED.

Case.	Location of tumor.	Patient's chief complaint.	Relative's diagnosis.	Duration of entire illness.	Headaches.	Swelling of fundi, diop- ters.	Other eye findings.	Convulsions.	Palsies.	Degree of mental change.	First symptom.	Early diagnosis.	Remarks.
A260748	Left temporo-occipital.	Loss of vision.	Failing health, loss of vision.	14 months.	Temporo-occipital.	4 to 5	Fields contracted; vision failing.	None.	Incoordina- tion of right side.	Marked change, late.	General lassitude.	?	Died following glioma of left occipitotemporal area.
A412704	Left temporo-parieto-occipital.	Headaches, loss of vision.	Headaches, loss of vision.	10 weeks.	General and vertex.	..	Slight blurring of discs. Right hemianop- sia.	None.	None.	Marked (early).	Headaches, visual dis- turbance, failing memory.	?	Died following glioma of left parieto-occipital area.
A449671	Pineal.	Depression.	Mental state.	1 year.	Frontal and occipital.	1 to 2	Blurring of vision.	None.	None.	Moderate, marked at times.	Headaches.	1. Syphilis. 2. Depres- sive psychosis.	Died following tumor of pineal gland.
A359964	Corpus striatum.	Weakness.	Weakness of left side.	4 months.	None.	..	None.	Day of death.	Ocular palsies. Slight weakness of left side.	Very moderate.	Ptosis of right lid.	1. Syphilis of central nervous system. 2. Enceph- alitis.	Died following glioma of both optic thalami and right lenticular nucleus.
A347201	Basal.	Visual dis- turbance.	Loss of vision.	2 years, 3 months.	None.	..	Loss of vision, fundi negative.	None.	None.	Marked (late). (State Hospital).	Loss of vision.	1. Pituitary tumor. 2. Enceph- alitis.	Died following glioma at base of brain pressing on optic tracts.
A341679	Right acusticus.	Headache, dizziness, insomnia and fatigue.	Change in character incoordi- nation; deafness of right ear.	4 years?	Occipital headaches.	..	None.	Violent attacks of epileptic temper.	Palsy in right side of face. Deaf in right ear.	Variable; very marked at times; atypical	? Facial weakness.	Mild depres- sion with hysterical manifesta- tions.	Right acusticus tumor removed elsewhere. Alive.
A436234	Right cerebellum.	Stupor.	Headaches, dizziness, stupor.	4 years?	Frontal and occipital.	1 to 2	....	Several attacks of uncon- sciousness with stupor.	None.	Last three weeks, al- most con- stant stupor.	Headaches?	1. Hysteria. 2. Enceph- alitis.	Died following glioma of right cerebellum with extension into fourth ventricle.

The investigation of psychic manifestations has not been uniform, but in gathering the data from the records and from the recent cases of brain tumor, the method outlined in Table 3, and adopted from Kirby's book has been employed, so far as possible.

The literature does not contain a definite classification of mental reactions in cases of brain tumor, nor does it describe a definite mental picture. Schuster, Müller, Knapp, Dew and others have analyzed fairly large series of cases of brain tumor. Schuster, in reviewing 775 cases in which there were psychic disturbances, says

TABLE 3.
PSYCHIATRIC EXAMINATION.

Personality.	Mental state.				
General intelligence. Knowledge and judgment. Mental level. Education, and so forth.	1. Attitude and general behavior. 2. Emotional reactions. Effect and mood.	Mental grasp. Orientation. Memory and thinking. Attention. Interest. Coöperation. Insight and judgment. (Comprehension). Fluctuations.	1. Mental activity. 2. Content of thought.	General motility. Coördination. Psychosomatic functions. (Aphasia-apraxia).	Stupor (describe).

that 100 per cent of patients with corpus callosum tumors have mental symptoms (frontal lobes 79.3 per cent, temporal 66.6 per cent). Knapp, in 104 cases, found that in 90 per cent there were mental symptoms. Dew noted the symptoms in 51 of 78 cases; in ten of these the growth was in the left frontal lobe, and in one it was subtentorial.

Considerable confusion and difference of opinion still exist with regard to the location of psychic function. It may be accepted that practically every brain tumor exerts some influence on the psychic qualities of the personality, although it may be so slight as to be overlooked. Whether the patient's psychic reactions are in any measure an index of psychic stability is difficult to determine.

A great many ill-defined symptoms relating to general psychic disturbances are not easily classified. It is generally believed that a steadily progressive stupor exists; this, however, does not appear to be entirely true. Among the generalized symptoms, irritability,

listlessness, mental and physical let-down, apprehension, uncertainty, and hebétude, appear to be the outstanding changes. Later apprehension may give way to indifference, but anxiety is not an uncommon symptom, especially in the earlier stages of the disease. As the disease progresses, apathy, stupor or coma may supervene. These are all generalized symptoms and have no localizing value.

The 239 cases in the series were grouped anatomically to ascertain, if possible, whether tumors in a certain location might present definite psychic manifestations. The cases were then reviewed from the mental standpoint, for the purpose of studying the psychic reactions. Anatomically, it was found that in all cases of bilateral frontal lobe tumors (corpus callosum) there were marked mental changes. In the cases that progressed slowly, as indicated by the clinical record, the mental symptoms occurred late, but at some time during the disease, were marked. Kennedy has said that a tumor of the corpus callosum can be diagnosed only at postmortem. In six of the seven cases in this series, an incorrect diagnosis was made, and remained unchanged until late in the disease.

ILLUSTRATIVE CASE.

CASE I (A298355).—A man, aged 54 years, was brought to the Clinic, December 1, 1919, because of loss of bladder and rectal control, and lack of interest. The patient himself made no complaint. About three months before, a gradually increasing mental change had been observed. The patient lost his ambition and interest in work, although he had continued at his trade of carpentry until two weeks before. He had become careless in his work, would forget what he was doing, and seemed little concerned about his short-comings. For two weeks before his examination he had been content to sit aimlessly at home, or to play with his children. About this time the family noted his indifference to bladder and rectal functions. He voided at any time and even defecated in his clothes. He said that he knew he should not soil himself, but he could not help it.

During general examination, the patient was indifferent and aimless, would sit and look at newspaper, which might be upside down. He was oriented in all spheres, and his attention might be held for a few moments when aroused. He would follow his son about in a fairly good-natured manner, but always objected to being examined, saying that he was not sick. He showed considerable perseveration, repeating movements at times for long periods. For example, one evening he sat before a wash bowl for over a half hour, turning the faucets on and off. When asked why he did so, he said, "I am doing this a hundred times to apply the principle of $\frac{3}{4}$ inch boards." His memory for both past and recent events was markedly impaired. He became readily confused in going around in the Clinic, and relied entirely on his son to guide him.

The neurologic examination revealed a slight tremor of the hands. Movements were slow, and there was slight tenderness over the forehead. The blood Wassermann reaction, and the spinal fluid Wassermann were negative; Nonne was positive; there were 556 polymorphonuclear cells, 123 small lymphocytes, and Lange of 0000123333. Because of the spinal fluid findings he was placed on treatment for syphilis. He grew worse rapidly, and died January 11, 1920. Necropsy did not reveal evidence of syphilis. A huge glioma 6.5 by 6.0 by 4.0 cm. (Fig. 1, Plate XIV) was found in the anterior portion of the corpus callosum extending into both frontal lobes, and compressing both anterior horns of the lateral ventricles.

Comment.—This represents a fairly characteristic case. It is noteworthy that two of the major signs of brain tumor were absent, namely, headache and choked disc. The unusual spinal fluid findings were misleading, and have been referred to elsewhere.^{*} A correct diagnosis was not made until late or at necropsy in any of the cases in the series (Table 2). In Case 1, the motor perseveration, which is a characteristic accompaniment of corpus callosum tumors, was very marked. Possibly this phenomenon might be considered under the head of apraxia, or diaschisis, especially if one accepts the view of Brun, that the apractic centers are joined by fibers passing through the corpus callosum. Bladder and bowel incontinence should also be mentioned under this heading, as three of seven patients had this difficulty.

By grouping together the mental reactions in these cases of corpus callosum tumors, one obtains a syndrome which is characterized by a marked progressive mental let-down, forgetfulness, confusion of thought, affective disturbances, lack of comprehension, emotional disturbance, and motor phenomena of an apractic nature (Table 4).

TABLE 4.

MENTAL REACTION IN SEVEN PATIENTS HAVING TUMORS OF THE BILATERAL FRONTAL LOBE (CORPUS CALLOSUM).

	Cases
Mental let-down (apathy, stupor).....	6(7)*
Memory defect (forgetfulness)	5(7)
Mental confusion	4(6)
Comprehension	4
Indifference	4
Affect	
Interest	3
Emotional reaction (good natured, silly euphoria)	4
Irritable, anger	3
Orientation, impaired	1
Apraxia (perseveration, bladder and bowel indifference)	3

* Late.

Much has been written concerning a so-called frontal lobe syndrome. Bianchi, in 1895, asserted that the prefrontal lobes have to do with psychic tone. Schäfer, however, found that at times abolition of the prefrontal lobes in monkeys resulted in no change. Experimental work has but a limited field in such a delicate problem, and our knowledge of psychic manifestations must be based on careful clinical observations supplemented by pathologic investigations. As yet no unanimity of opinion exists regarding the functions of the frontal lobes. It may be said that frontal lobe lesions may exist for a long time without causing marked mental symptoms; more often, however, there is failure to observe or to interpret mild changes, thus a light, euphoric mood may, for a time, be the only manifestation of a mental change. In this series of brain tumors, for some unknown reason, the right frontal lobe has been the most commonly affected. It would seem that any portion of the frontal lobe might be affected and produce mental changes; on the other hand, it must be kept in mind that every frontal lobe tumor does not present mental changes. Auerbach believes that the psychic disturbances associated with frontal lobe lesions are the result of pressure, as usually a tumor in this region may grow to a large size before producing any objective signs. Goldstein asserts that certain syndromes are developed in various portions of the frontal lobes. This is not corroborated by observation in the Mayo Clinic. However, when the lesion does produce mental manifestations, a complex of mental reactions is produced which, for purposes of clinical description, may well be termed a frontal lobe syndrome. As a rule the tumors are large; however, a small frontal abscess may produce as typical a picture as a huge glioma invading the entire frontal lobe.

ILLUSTRATIVE CASE.

CASE 2 (A447460).—A minister, aged 52 years, was brought to the Clinic, November 14, 1923, because of mental trouble. In the fall of 1922, the patient was despondent, which was considered by his wife to be due to his various duties. About January, 1923, he began to complain of severe bilateral fronto-temporal headaches, which occurred from two to three times a week. About the middle of April, it was noted that his sermons were incoherent, and that he stumbled through them, but always in an unconcerned manner. He preached his last sermon, which was an utter failure, but with which he was immensely pleased, in August. He was asked to resign, and went on a campaigning tour to raise funds. He was gone 20 days, and returned dirty,

gave a rambling account of his trip, of having lost himself, and of getting into various difficulties. His letters, while away, were incoherent. His memory now failed markedly; his attention, interest and ability to concentrate were also impaired; he was unable to remember details; speech was slow and dragging, so that he became unable to carry on a conversation; he would break off suddenly and did not seem to realize what he was saying. He developed peculiar mannerisms, such as kicking with his right foot, or tapping on objects with his right forefinger. He read signs over and over again. During the month prior to his examination at the Clinic he would sit about disinterestedly, he was careless about his habits and dress, soiled his clothes and on one occasion urinated into his slipper, pouring it out of the window, much to his own amusement, but to the chagrin of his wife. This lack of affect and general disinterest was one of the most outstanding features of his case.

The neurologic examination proved to be practically negative for any focal evidence of neoplasm. The fundi showed some blurring of the discs, and the sella, destruction.

The patient gradually became worse and a right frontal exploration was made December 4, but the tumor was not located. Two weeks later the left side was explored and a huge glioma, about 5 cm. in diameter, extending into the upper posterior portion of the frontal lobe, was exposed. The patient improved considerably. A letter concerning him, April 1, 1924, stated that he was working around home, but was dull and apathetic.

Comment.—This case represents a characteristic frontal lobe syndrome. The outstanding features may be summarized as follows: gradual change in personality, lack of interest, loss of affect, impairment of attention, memory defect, mannerisms and incoördination disturbances. The blasé manner in which these patients look on their environment, the absolute contentment and satisfaction with themselves, is most noteworthy. Occasionally depressive reactions manifest themselves, although suicide is rare. This lack of affect, and mannerism was well illustrated by a 16-year old boy who developed a frontal lobe abscess (Case A203726, Table 2). During the month of his observation in the hospital he would lie in bed absolutely indifferent to what went on about him. He kept up a constant humming, low singing or whistling. He would be aroused for a few moments, but would rapidly sink back into a state of indifference or apathy; even when he paged through a magazine, this monotonous humming continued. He answered questions in a rather "don't care" manner and seemed quite unconcerned about his condition. Following the drainage of an abscess in the right prefrontal lobe he recovered completely.

Coördination disturbances have often been attributed to the posterior portion of the frontal lobes, especially when there has been an extension to the basal ganglia. This coördination, which may be misinterpreted as a cerebellar phenomenon, must not be mistaken for a cerebellar sign. There is but little difference in the syndrome produced by a neoplasm of the anterior portion of the corpus callosum, and of one of the frontal lobes. Frequently, with frontal lobe lesions, involvement of adjacent structures serves as a clue to diagnosis. I have noted no difference in the mental syndromes produced by lesions of the right or left frontal lobe. It must be borne in mind that at times frontal lobe lesions produce no marked mental phenomena, and that at others, the reactions may be entirely generalized.

Fronto-motor lesions may present mental manifestations identical to pure frontal lesions; they are readily differentiated, however, by the associated neurologic findings. Temporal lobe tumors with their convulsive attacks, various visual phenomena, and apractic disturbances may also at times closely simulate frontal lobe reactions. This is likewise true of supracellar growths. As a rule, however, the mental phenomena are not so characteristic, but belong to the group of generalized psychic changes. The disturbances of aphasia and apraxia are of special interest, and often give a characteristic coloring to the mental picture.

ILLUSTRATIVE CASE.

CASE 3 (A412704).—A man, aged 45 years, had consulted a physician six weeks before coming to the Clinic, because of failing vision. Shortly after this, he developed headaches, and his memory began to fail. He made several poor business ventures, showing a decided lack of judgment. Three weeks before coming to the Clinic, he stopped work because of headaches and mental change. Since then he had been dull, with gradually increasing difficulty in expressing himself.

The neurologic examination revealed a right homonymous hemianopsia with slight blurring of the discs. The deep reflexes were somewhat sluggish, the gait unsteady, and there was tendency to fall backward, when sitting. Marked dysmetria and astereognosis were present on both sides. The blood and spinal fluid were negative. The patient was indifferent, easily angered, and disoriented for time and place; his attention was poor, and memory markedly impaired. He failed to grasp all that was said to him, but usually with repetition was made to understand. He would explain his difficulty as follows: "I understand questions, but cannot answer them; guess my head does not work. I'm three times as smart as any of you when I'm well." He

was unable to read, and confused commands; was unable to name a knife, spoon, key, or tooth-brush from either sight or touch; and was unable to write. When given a pencil he would grasp it near the upper end, make a few lines and give up. He was unable to use a hairbrush or tooth-brush correctly. There was marked difficulty in carrying out commands such as "Touch your left ear with the right hand." Simple commands, such as, "Touch your nose," would be carried out correctly. If, however, the request were, "Touch your nose with your left hand," an incorrect movement might be executed.

The patient gradually became more stupid, and the general weakness, more marked on the right side, increased. A left subtemporal decompression was made, but the growth could not be removed. Death followed, and at postmortem a large infiltrating glioma was found in the posterior portion of the temporal lobe, and extending into the adjacent parietal and occipital lobe (Fig. 2, Plate XIV).

Comment.—Case 3 represents a combination of aphasia and apraxia associated with mental changes. This type of disturbance has been reviewed recently by various writers, and a discussion of it would be outside the scope of this paper.

It has been stated that 65 per cent of cases of pituitary tumor show mental changes. Unfortunately no data were given as to the stage at which these observations were made. Relatively few cases of pituitary tumor observed in the Mayo Clinic exhibited marked mental changes.

From an anatomic standpoint, there is but little to say regarding the remaining portions of the brain and their resulting psychic manifestations, the rule being that, if mental symptoms are present, they conform to the group of generalized reactions. Exceptions may occur which cannot be discussed here.

From the psychiatric standpoint the outstanding mental reactions have been as follows: psychoneurotic reactions, confusional states, dementias (arteriosclerotic, senile, and vascular), depressive reactions, dementia præcox reactions, and reactions due to encephalitis or syphilis (Table 5). In attempting to group these mental states to determine if they might help in the diagnosis or the location of the tumor, it is found that the psychic reactions accompanying tumors of the corpus callosum and frontal lobe group themselves together, and are fairly specific. Beyond this fact no localizing value can be attached to the mental phenomena. A third factor becomes apparent, however: that associated mental disturbances, which may be quite independent, are accentuated or precipitated by the disease.

Psychoneurotic manifestations, especially neurasthenic states, as the precursors of more marked mental phenomena, are not uncommon. As a rule, these reactions are entirely overlooked or considered the result of some functional change. While such a com-

TABLE 5.

FIRST DIAGNOSIS IN THE GROUP OF THIRTY-NINE CASES OF TUMOR OF THE BRAIN.

<i>Corpus callosum:</i>	<i>Left fronto-motor:</i>
1. Presenile psychosis.	1. Epilepsy.
2. Syphilis. Brain tumor.	<i>Right temporosphenoidal:</i>
3. Epilepsy.	1. Encephalitis.
4. "Losing his mind."	2. Dementia praecox.
5. Paresis. Encephalitis.	<i>Left temporosphenoidal:</i>
6. Tumor of the skull.	1. Brain tumor.
7. Syphilis. Encephalitis.	2. Mental confusion.
<i>Right frontal lobe:</i>	3. None made.
1. Mental state (marked).	4. Brain tumor.
2. Arteriosclerotic dementia.	5. Syphilis. Arteriosclerosis.
3. General paralysis.	<i>Left temporo-occipital:</i>
4. "Compensation neurosis."	1. None made.
5. Mental state (marked).	<i>Left temporo-parieto-occipital:</i>
6. Psychoneurosis.	1. None made.
7. Orbital tumor.	<i>Pineal:</i>
8. Brain tumor (location?)	1. Depressive psychosis.
9. Epilepsy. Syphilis.	<i>Corpus striatum:</i>
10. (Frontal lobe lesion?)	1. Syphilis. Encephalitis.
<i>Left frontal lobe:</i>	<i>Basal:</i>
1. Mental state.	1. Pituitary tumor. Encephalitis.
2. None made.	<i>Right acoustic:</i>
3. Depression.	1. Depression with hysterical manifestations.
<i>Pituitary (third ventricle):</i>	<i>Right cerebellar:</i>
1. Syphilis. Encephalitis.	1. Hysteria. Encephalitis.
2. Pituitary tumor. Encephalitis.	
<i>Right fronto-motor:</i>	
1. Hysteria. Syphilis.	
2. Trauma. Hemorrhage.	

plaint may be the premonitory evidence of tumor, it is not characteristic of any location. Only too frequently is a diagnosis of neurasthenia made, and at some later date the true underlying condition manifests itself. There is probably no means at our command of avoiding such an error in early cases of tumor. It is well to bear in mind, however, that not infrequently a beginning

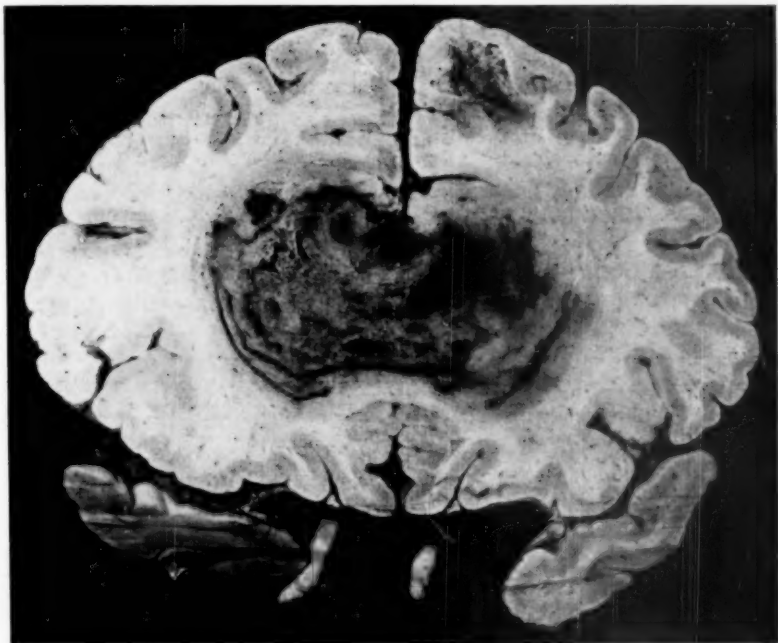


FIG. 1 (Case A298355).—Tumor of the Corpus Callosum.

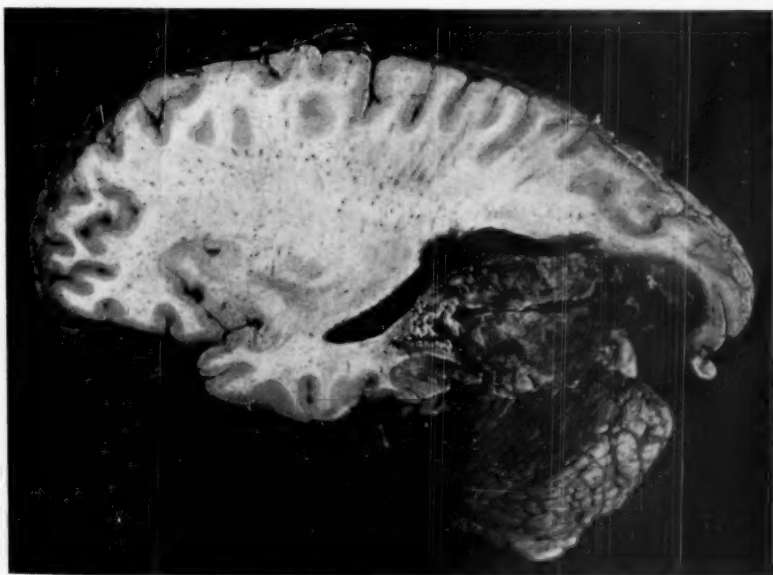


FIG. 2 (Case A412704).—Glioma of the Left Temporal Lobe.

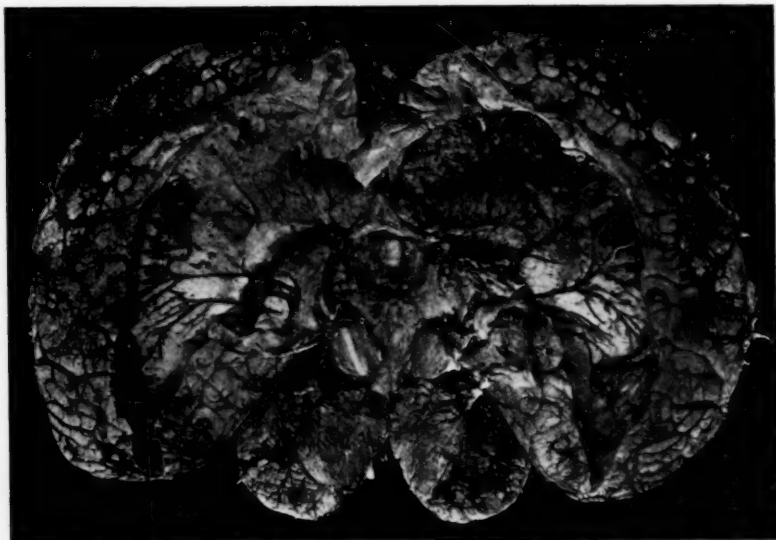


FIG. 3 (Case A449671).—Tumor of the Pineal Gland with Internal Hydrocephalus.

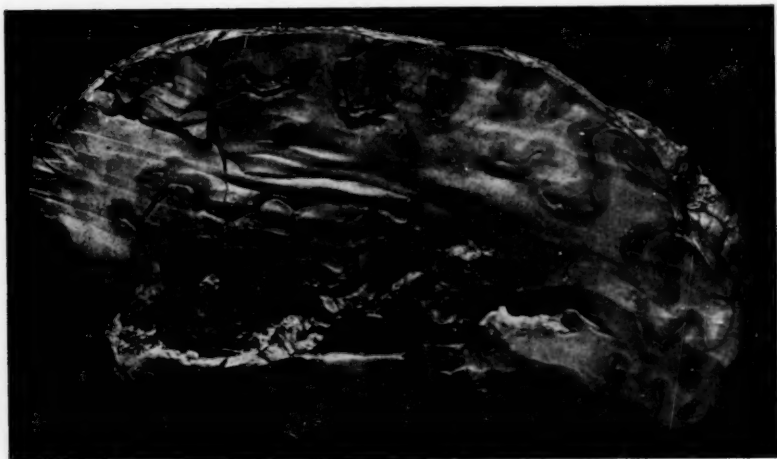


FIG. 4 (Case A381244).—Glioma of the Left Temporal Lobe.

choked disc will aid in the solution of such a problem. Only recently a patient with an apparently definite case of hysteria was found to have an acoustic tumor. It was removed and at the present time the patient is enjoying good health.

Confusional states of various types, anxiety reactions, hallucinatory episodes, vague unsystematized delusional trends, and dementia præcox reactions, especially of the catatonic type, are frequently observed, and in the absence of focal neurologic signs, present marked difficulties of interpretation.

ILLUSTRATIVE CASE.

CASE 4 (A449671). A man, aged 21 years, had been restless, introspective and self-accusatory for a year before coming to the Clinic. He was much worried about his masturbation, developing mild ideas of reference, guilt, and fear of death. When first seen, he was thought to suffer from depression or early dementia præcox. His size was unusual, and his fears and obsessions seemed only loosely formed and easily dissipated. Examination revealed a choked disc of one to two diopters. He gradually became worse and died. At necropsy, a pineal tumor with internal hydrocephalus was found (Fig. 3, Plate XV).

Comment.—In another patient (Case A352250, Table 2), a diagnosis of catatonic dementia præcox had been made, and only after considerable study and the discovery of unusual spinal fluid findings was the true nature of his condition suspected. At necropsy multiple abscesses throughout the right temporal lobe were found. That organic affections may produce a clinical picture of dementia præcox, especially of the catatonic type, is well recognized. In this case the possibility of a schizophrenic makeup existing prior to the abscess was an added factor, and such a combination might well occur.

Depressive states, while rather uncommon, are noted in cases of pituitary tumor. However, confusional reactions, or even marked apathy, may be met with, especially in supracellar lesions.

Dementias of a vascular, arteriosclerotic or early senile type are common, especially in cases of tumor of the frontal lobe, and not infrequently if such reactions occur in patients more than 50 years of age, they are misinterpreted, and the possibility of neoplasm is overlooked.

ILLUSTRATIVE CASES.

CASE 5 (A445147).—A man, aged 50 years, was brought to the hospital because of left-sided weakness and mental change. Six weeks before exami-

nation, he had been thrown to the street from his wagon and was said to have had a cerebral hemorrhage. While under observation he became disoriented, and marked memory impairment and increasing stupor developed. He died following an exploratory decompression, and at necropsy a huge metastatic carcinoma of the right fronto-parietal area was found. Thus a traumatic and vascular factor existed which entirely overshadowed what should have been recognized as a tumor.

In the following case, a not uncommon picture of a vascular insult complicated by general paralysis was considered as the basis of the patient's trouble.

CASE 6 (A381244).—A man, aged 58 years, had a "slight stroke" in November, 1920, and for three weeks his speech was mumbling. In July, 1921, he had several transitory spells of right-sided paresthesia. Following this he developed a progressive aphasia and was treated for general paralysis. He became restless, and indifferent about his person, and was brought to the Clinic because of the marked mental change. He was found to have a conduction type of aphasia with perseveration, mannerism and apraxia. The neurologic examination showed a swelling of the nerve heads of three diopters, with edema extending into the periphery. The patient died February 1, 1922, following exploration. A huge glioma of the superior portion of the left temporal lobe was found (Fig. 4, Plate XV).

Comment.—Case 6 represents a temporal lobe syndrome as does Case 3, that is, aphasia, apraxia and mental change. While there was much to indicate a vascular lesion, the progressive nature pointed to the existence of a neoplasm. At times the sudden onset of paralysis, as a hemiplegia or progressive paralysis, may seem to indicate a vascular lesion, and the true nature of the condition is not discovered until later, or at necropsy.

The psychic manifestations of encephalitis or a syphilitic affection are too numerous to mention. Practically any portion of the brain may be affected by a neoplastic growth producing the picture of encephalitis.²⁴ Five cases in this series had been considered as encephalitis; in two the diagnosis was not established correctly until necropsy. In one case (Case A359964, Table 2), a glioma of the corpus striatum, the parkinsonian attitude was so marked that the patient was demonstrated before students as a case of encephalitis.

Mental changes suggesting general paralysis are common, and at times are extremely difficult to differentiate from frontal lobe tumors.

CASE 7 (A351224).—A contractor, aged 40 years, had excellent habits and was very successful. During 1917, his wife noted a change in personality. He

would stay away from home, get drunk, and neglect his work. During 1918, he had four convulsive attacks and his drinking became more pronounced. During 1918 and 1920, he allowed his business to go to ruin, and would take his men away from their work and get drunk with them. He lost considerable money and his contracts were taken away from him. He developed frequent frontal headaches, but in spite of these he maintained a jovial, care-free attitude. In 1923, his mental change was so marked that treatment for epilepsy was supplanted by antisyphilitic treatment. He gradually grew worse, lost all interest in things, but had no insight into his condition. He developed incontinence of bowels and bladder, but not until September, 1923, were any localizing signs noted. The neurologic examination on November 1 showed a slight weakness of the entire left side, a mild general tremor and some incoördination of the left arm and leg. The necropsy, November 8, 1923, revealed a large glioma of the right frontal lobe.

Comment.—The association of syphilis and brain tumor must constantly be kept in mind, and the presence of positive serology should not be accepted as ruling out a neoplasm, as such a combination might well exist. This was true in Case A260055 (Table 2).

SUMMARY.

In reviewing the psychic changes in brain tumors it will be found that they tend to arrange themselves into three groups:

The General Symptoms.—These are as vague and difficult of interpretation as are other general symptoms from a neurologic standpoint. The more generalized symptoms are as follows:

1. Mild mental and physical let-down (neurasthenic states).
2. Mild changes in personality (indifference, inadequacy, witzelsucht).
3. Anxiety states.
4. Depressive reactions.
5. Mental confusion.
6. Deteriorating states, simulating:
 - a. Epilepsy.
 - b. Arteriosclerosis.
 - c. Senile dementia.
 - d. Vascular lesions.
 - e. Traumatic lesions.
 - f. Dementia paralytica.
 - g. Dementia præcox (catatonic states).

These reactions are rarely ever sufficient to aid in the localization of a tumor, but frequently may serve as a clue to the correct diagnosis.

Specific Mental Reactions.—1. Lack of affect (change in personality).

2. Impaired mental grasp (lack of memory, interest and attention).

3. Impaired insight and judgment.

4. Impaired mental activity (poverty of thought processes).

5. Disturbances of general motility (psychosomatic).

When these factors are present, in the absence of any focal neurologic signs, one may speak of a frontal lobe syndrome, understanding that this is not a positive syndrome, but is very suggestive of a lesion in the forward portion of the cerebrum. These mental changes may be of varying intensity, show marked fluctuations, and, as a rule, appear late in the disease, the minor changes probably having been entirely overlooked in the early stages of the affection.

Associated Mental Reactions.—Under this heading are considered the mental states associated with brain tumors, in which a direct relationship is difficult to establish. Thus hysterical episodes, maniacal states, or other psychotic states which occasionally lead to institutional confinement may at times be quite independent of the effects of the neoplasm. Undoubtedly the marked changes brought about by a new growth in the brain are likely to precipitate psychic alterations, especially in neuropathic individuals in whom the stabilizing qualities are none too good.

In conclusion it may be stated that a psychiatric examination is of considerable aid in all cases of suspected brain tumor, regardless of location, type of tumor, stage of the disease process, or mental status of the patient.

BIBLIOGRAPHY.

1. Auerbach, S.: Beitrag zur Diagnostik der Geschwülste des Stirnhirns. Deutsch. Ztschr. f. Nervenheilk., 1902, xxii, 313-332.
2. Bianchi, L.: The mechanism of the brain and the function of the frontal lobes. Translated by J. H. MacDonald. Edinburgh, Livingstone, 1922, pp. 66-208.

3. Brun, R.: Klinische und Anatomische Studien über Apraxia. Schweizer. Arch. f. Neurol. u. Psychiat., 1921, ix, 29-64.
4. Dew, H. R.: Tumors of the brain; their pathology and treatment; an analysis of eighty-five cases. Med. Jour. Australia, 1922, i, 515-521.
5. Goldstein, K.: Die Funktionen des Stirnhirnes und ihre Bedeutung für die Diagnose der Stirnhirnerkrankungen. Med. Klin., 1923, xix, 965-969; 1006-1010.
6. Kennedy, F.: Tumors of the intracranial cavity. Nelson's Loose-Leaf Living Medicine, 1920, vi, 127-132.
7. Kirby, G. H.: Guides for history taking and clinical examination for psychiatric cases. Utica, New York State Hosp. Press, 1921, 83 pp.
8. Knapp, P. C.: The mental symptoms of cerebral tumors. Brain, 1905, xxix, 35-56.
9. Moersch, F. P.: Serology in brain tumors. Jour. Nerv. and Ment. Dis., 1923, lviii, 16-32.
10. Müller, E.: Ueber Psychische Störungen bei Geschwülsten und Verletzungen des Stirnhirns. Deutsch. Ztschr. f. Nervenheilk., 1902, xxi, 178-208.
11. Parker, H. L.: Tumors of the brain simulating epidemic encephalitis and involving the third ventricle, the fourth ventricle and the basal ganglia. Jour. Nerv. and Ment. Dis., 1923, lviii, 1-15.
12. Schäfer, E. A.: On the alleged sensory functions of the motor cortex cerebri. Jour. Physiol., 1898-1899, xxiii, 310-314.
13. Schuster, P.: Psychische Störungen bei Hirntumoren. Stuttgart, Enke, 1902, 368 pp.

DISCUSSION.

DR. MITCHELL.—Dr. Moersch has made a very interesting contribution to the subject of brain tumors, stating clearly the difficulty often encountered in diagnosis. In our hospital work it is embarrassing to have an unsuspected tumor first revealed by autopsy, because none of the distinctive symptoms of brain tumor had been recognized during life. This will occasionally happen and usually in such cases as described by Dr. Moersch. I remember one case showing for about two years mild psychic symptoms, with none of the usual findings in tumor cases and no involvement of cranial nerves or motor tracts. The man had several epileptiform attacks and finally died in one. Autopsy showed a tumor of considerable size in the frontal region near the hippocampal gyrus.

Another case was that of a woman who had been under observation for two or three years, first showing mental symptoms that in the pre-Wassermann days were considered to be the result of paresis with focal lesions which were held to be responsible for irregular twitchings of one arm and the facial muscles. These symptoms came on at rare intervals with no loss of consciousness. Following improvement the patient was

under more or less constant supervision of able neurologists who were unable to detect any organic basis for her symptoms up to a short time before death. The motor phenomena were believed to be hysterical reactions. The patient died suddenly and autopsy showed an infiltrating glioma involving the frontal poles and a considerable portion of the parietal region with no appreciable tumor mass.

The improved methods of diagnosis now available will prevent the occurrence of many such errors and Dr. Moersch's paper is most timely in calling attention to the variable clinical findings in frontal tumors.

HOMICIDE IN MASSACHUSETTS.*

By ALBERT WARREN STEARNS, M. D.,
Psychiatrist at the Massachusetts State Prison.

Murder, as a natural phenomenon, represents the clash between the individual units of the human race. Life is essentially competitive. Back of this competition as a driving force lie the selfish interests of the individual. When a handful of seed is thrown upon the ground, each unit struggles, unconsciously, to be sure, to express itself to the fullest, and the stronger and more fortunately situated ones ruthlessly destroy the weaker and less fortunate. So it goes through the various levels of life, being no different from a biological sense in the case of man than with the blade of grass, except for the fact that various cultural levels and various types of civilization have tended to limit the struggle between individuals and prevent the destruction of one life by another. "Thou shalt not kill" had an important place among the rules of life long, long ago. In general, social procedures tending to limit the taking of life come under three heads. First, codes of ethics by which certain social expedencies have received a degree of sanctity. Second, by legal enactment which has attempted to enforce its dictates by coercive means. Third, social custom which by an elaborate system of conventionality and taboo has influenced conduct. The last of these seems to the writer most powerful because whenever we delve into the realm of instinct, appetites, desires, or whatever terminology we adopt, there is an outstanding tendency on the part of human beings to be like their associates. A tendency to conform to the customs and manners of a particular group is certainly one of the most conspicuous rules of life. The rule against killing, except under particular circumstances, is almost universal, but though human desires and passions may be regulated and modified, certain individuals under certain circumstances throw off the thin veneer of self-restraint imposed by civilization and

* Read by title at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

respond to the impulses of emotion as if there had been no civilizing influence. The reflex impulse to attack an adversary is only conditioned in so far as the choice of weapons is concerned.

Though murder has always had a prominent place in human affairs and interest, surprisingly little knowledge which can be interpreted in terms of modern social psychology can be gained from literature. For something less than one hundred years it has been included among those natural phenomena tabulated in Euro-

TABLE I.¹
AVERAGE HOMICIDE RATES.

Country.	Period.	Average rate for period.
United States:		
Total in registration area.....	1911-1921	7.2
England and Wales.....	1911-1921	0.76
Scotland	1911-1921	0.40
Ireland	1911-1919	0.92
Canada:		
Ontario	1911-1921	0.53
Quebec	1911-1921	0.54
Australia	1911-1920	1.88
New Zealand	1911-1922	0.93
South Africa	1912-1918	1.79
Spain	1911-1917	0.92
Italy (Abolition)	1910-1920	3.59
Holland (Abolition)	1911-1918	0.31
Sweden	1909-1918	1.32
Norway (Abolition)	1910-1919	0.82
Switzerland (10 cantons with capital punishment, 15 without)	1911-1920	0.18

pean statistics. We have learned the rate for each race or nation, have known for a long time that the rates were higher for the southern countries and lower in northern Europe, and that it is more frequent in the lower cultural levels. Both of these facts have been contrasted with suicide. Females kill much less frequently than males. Statistical comparisons have been made according to many varying conditions of life but these are difficult to apply to particular cases. Similar statistical work has been carried on irregularly and with varying degrees of accuracy in the United States. Tables I and II taken from Lawes show the character of this statistical work.

TABLE II.²

SHOWING THE NUMBER OF PRISONERS SENTENCED TO DEATH IN EACH STATE DURING THE YEARS 1912 TO 1919, INCLUSIVE, THE NUMBER OF THOSE SENTENCED WHO WERE SUBSEQUENTLY EXECUTED OR WHO DIED, THE PERCENTAGE OF EXECUTIONS AND DEATHS IN RELATION TO DEATH SENTENCES, AND WHERE AVAILABLE, THE AVERAGE HOMICIDE RATE FOR EACH STATE FOR THE PERIOD.

States.	Number of prisoners sentenced each year.								Total number sentenced to death during period.	Number of those sentenced who were subsequently executed or who died.	Percentage of executions and deaths in relation to death sentences.	Average homicide rate for period.
	1912	1913	1914	1915	1916	1917	1918	1919				
Maine(M).....	..	..	..	..	..	..	..	..	....	....	....	1.80
New Hampshire.....	0	0	0	0	1	0	1	0	2	2	100%	1.97
Vermont.....	1	0	0	1	0	0	0	1	3	2	66%	1.97
Massachusetts.....	5	1	2	1	2	1	0	0	12	9	75%	2.98
Rhode Island(M)....	..	..	..	..	..	..	..	..	....	....	....	3.3
Connecticut.....	2	4	1	5	2	6	4	2	26	23	88%	3.76
New York.....	26	11	21	22	11	16	11	27	145	89	61%	4.63
New Jersey.....	7	9	8	5	4	5	5	2	45	33	73%	4.52
Pennsylvania.....	0	0	7	10	7	12	21	20	77	75	97%	5.66
Delaware.....	0	0	0	1	1	3	0	1	6	6	100%	7.7 (G)
Maryland.....	..	..	..	..	..	..	..	..	(B)	(B)	(B)	5.78
Virginia.....	16	13	12	11	10	6	4	6	78	64	82%	10.95 (E)
West Virginia.....	0	4	2	3	2	1	3	2	17	12	70%	(A)
South Carolina.....	9	10	4	13	8	4	7	6	61	44	72%	12.2 (F)
Georgia.....	..	..	..	..	..	..	..	..	(B)	(B)	(B)	(A)
Ohio.....	4	3	2	2	1	3	11	8	34	18	53%	7.0
Indiana.....	1	2	1	2	0	0	0	0	4	4	40%	5.31
Illinois.....	..	..	..	..	..	..	..	..	(B)	(B)	(B)	7.5 (D)
Michigan(M).....	..	..	..	..	..	..	..	..	....	....	....	3.7
Wisconsin(M).....	..	..	..	..	..	..	..	..	....	....	....	2.33
Missouri.....	..	..	..	..	..	..	..	..	(B)	(B)	(B)	9.7
Kansas(M).....	..	..	..	..	..	..	..	..	....	....	....	6.7 (H)
Iowa.....	0	0	0	0	0	0	0	0	0	0	0%	(A)
Nebraska.....	0	0	1	1	1	0	2	0	5	2	40%	(A)
Minnesota(M).....	..	..	..	..	..	..	..	..	....	....	....	3.29
North Dakota(M)....	..	..	..	..	..	..	..	..	....	....	....	(A)
South Dakota(M)....	..	..	..	..	..	..	..	..	....	....	....	(A)
Kentucky.....	3	9	1	5	1	4	3	6	32	22	68%	11.33
Louisiana.....	10	7	5	7	3	5	9	(C)	46	30	65%	(A)
Texas.....	..	..	..	..	..	..	..	..	(B)	(B)	(B)	(A)
New Mexico.....	2	1	0	1	10	1	0	1	16	15	93%	(A)
Arizona.....	2	3	4	2	2	0	0	1	14	4	29%	(A)
Wyoming.....	3	1	0	5	0	0	0	0	9	4	44%	(A)
Nevada.....	1	2	1	0	0	1	0	0	5	2	40%	(A)
Idaho.....	0	0	0	0	0	0	0	0	0	0	0%	(A)
Utah.....	0	0	1	2	2	1	1	1	8	3	37%	6.76
Montana.....	..	..	..	..	..	..	..	..	(B)	(B)	(B)	12.95
Washington.....	1	1	(K)	..	..	..	..	..	2	1	50%	6.91
Oregon.....	8	3	1	(L)	..	..	..	..	13	7	54%	4.5 (D)
California.....	7	5	6	11	3	2	13	9	56	41	73%	11.6

(A)—No homicide rate statistics.

(B)—Executions held in counties, no state wide figures.

(C)—Executions after 1918 held in counties.

(D)—Rates are for 1918-1919.

(E)—Rates are for 1913-1919.

(F)—Rates are for 1916-1919.

(G)—Rates are for 1919.

(H)—Rates are for 1914-1919.

(K)—Capital punishment abolished in 1913.

(L)—Capital punishment abolished in 1914.

(M)—Abolition.

Apart from such studies, there is much literature concerned with individual cases, for the most part unusual and dealing largely

TABLE III.

HOMICIDE RATE PER 100,000 INHABITANTS.

1850 .....	.9	1886	2.4
1851	1.4	1887	2.6
1852	1.1	1888	2.5
1853	2.3	1889	2.3
1854	1.6	1890	1.6
1855	2.3	1891	2.6
1856	1.7	1892	3.0
1857	2.3	1893	3.2
1858	1.5	1894	2.8
1859	1.5	1895	2.9
1860	1.5	1896	2.9
1861	1.5	1897	2.6
1862	1.5	1898	2.6
1863	1.4	1899	2.1
1864	1.9	1900	2.2
1865 .....	.8	1901	2.3
1866	2.1	1902	2.6
1867 .....	.8	1903	2.5
1868	1.1	1904	2.2
1869	1.2	1905	2.2
1870	1.8	1906	2.8
1871	2.0	1907	3.0
1872	1.7	1908	3.3
1873	1.7	1909	3.4
1874	1.6	1910	3.0
1875	1.3	1911	3.7
1876	1.4	1912	3.7
1877	1.1	1913	4.0
1878	1.1	1914	3.8
1879 .....	.9	1915	3.7
1880 .....	.8	1916	4.0
1881	1.1	1917	2.7
1882	1.1	1918	2.4
1883 .....	.8	1919	2.7
1884 .....	.9	1920	2.3
1885	1.1	1921	2.8

with murder committed by persons showing more or less mental pathology. The writer has been studying the social history and mental status of the admissions to the Charlestown State Prison for

a number of years. In 1921 analysis was made of a year's admissions, thus getting a cross-section of serious crime in Massachusetts for that period. It was found that of the 107 cases considered 25 were for sex offences, 26 for murder or its attempt, and 56 for stealing or obtaining money dishonestly. It is now proposed to study each of these groups more closely. In accordance with this plan, 100 consecutive cases convicted of murder have been analyzed.

TABLE IV.

Year.	Medical examiner's reports.	Convic- tions.	Regis- tration reports.	United States census.	Difference between highest and lowest.
1900	61	19	19	23	42
1901	65	15	14	33	51
1902	76	18	29	33	47
1903	74	24	..	33	41
1904	66	18	29	36	37
1905	67	22	24	38	43
1906	86	29	33	46	53
1907	96	17	44	69	52
1908	107	31	66	79	41
1909	114	38	71	81	43
1910	111	21	77	90	34
1911	127	35	87	101	40
1912	132	38	92	106	40
1913	144	24	111	108	36
1914	140	26	106	117	34
1915	138	50	113	120	25
1916	150	30	115	126	35
1917	104	41	106	105	2
1918	95	37	95	87	8
1919	104	36	102	108	6
1920	90	30	78	82	12
	2147	599			

In addition, a survey of the statistical information available in Massachusetts has been made. As with the previous study, no attempt has been made to go into the minutiae of the sociological or psychological details, but "an endeavor has been made to satisfy ourselves *in general*, rather than in technical terms, as to what sort of a man we were dealing with, and to determine what factors in his life-history and mental make-up would tend to explain his being in prison and would be of aid in prophesying or planning his

TABLE V.
MEDICAL EXAMINER'S REPORT.

Year.....	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Homicide.....	45	47	52	52	51	35	60	72	76	68	74	74	70	79	57	61	65	76	74	66	67	86	96	107	114	111	127	132	144	140	138	150	104	95	104	90	109
Weapons, shoot- ing, firearms.	..	6	12	8	14	9	11	21	8	19	15	15	17	24	31	34	40	22	22	25	24	21	49	36	28	37	35	41	52	41	58	46	58	46	47	42	66
Stabbing, cutting and piercing in- struments.....	..	3	6	2	4	3	3	6	1	8	5	10	8	4	..	4	..	4	9	4	2	11	2	9	17	14	13	12	10	16	12	17	17	16	16	8	14
Other wounds.....	..	2	2	1	1	3	8	5	10	..	..	2	4	8	1	1	7	1	10	6	1	1	10	3	2	..	4	2	4	6	5	..	..	..	..	..	..
Falls and blows	..	10	13	17	8	13	10	19	23	19	27	13	9	13	9	..	1	16	16	9	17	18	14	13	23	24	17	29	26	31	23	..	..	..	..	..	..
Smothering and strangulation.	..	1	..	..	1	..	3	3	1	4	1	2	2	8	..	..	..	..	..	..	..	4	1	..	4	1	8	13	3	9	..	..	..	..	..	..	..
Poison .....	..	7	1	..	1	..	3	2	4	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..
Infanticide.....	..	13	8	17	13	4	13	4	6	5	3	17	12	15	1	11	5	15	2	9	7	6	7	17	19	16	15	8	15	13	6	..	..	..	..	..	..
Execution, elec- trocution.....	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	2	2	..	..	..	..	..	..	..	1	2	5	1	1	1	..	..	..	..	..	..
Other methods....	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	2	..	4	..	..	..	..	..	..	..	87	35	33	41	40	20
Abortion.....	8	5	10	7	9	3	9	12	13	13	17	15	18	13	12	10	12	18	15	13	16	23	13	24	..	18	32	22	33	29	24	..	..	..	..	..	..
Population.....	1,942,141	1,998,174	2,055,821	2,115,131	2,176,153	2,238,943	2,288,911	2,339,994	2,392,217	2,445,605	2,500,183	2,558,437	2,618,048	2,679,048	2,741,470	2,805,346	2,849,047	2,889,386	2,929,725	2,970,064	3,015,872	3,089,029	3,162,186	3,235,343	3,308,500	3,380,151	3,446,079	3,512,007	3,577,935	3,643,863	3,693,310	3,775,720	3,841,648	3,907,576	3,935,614	3,952,356	3,985,836
Homicide per 100,000 population.	2.3	2.4	2.6	2.5	2.3	1.6	2.6	3.0	3.2	2.8	2.9	2.9	2.6	2.6	2.1	2.2	2.3	2.6	2.5	2.2	2.2	3.0	3.3	3.3	3.3	3.4	3.0	3.7	4.0	3.8	3.7	4.0	2.7	2.4	2.7	2.3	2.8

future career."* This work may be taken as a continuation of an elaboration of the former, and frequent references will be made for purposes of comparison.

In Massachusetts, deaths due to homicide have been recorded since 1842, but not until 1885, when all violent deaths were made subject to investigation by medical examiners, have the figures been reliable. Table III shows the rate per 100,000 inhabitants from 1850 to 1921. The increase in 1886 is obviously due to greater accuracy of the medical examiner's report. Table IV shows the variation

TABLE VI.

EXECUTIONS IN MASSACHUSETTS STATE PRISON.

1901	0
1902	4
1906	2
1909	0
1910	4
1911	2
1912	5
1913	1
1914	1
1915	1
1916	1
1917	1
1920	1
1923	1

—
24

TABLE VII.

CASES RELEASED ON PROBATION.

1909	1
1911	1
1912	2
1913	1
1914	2
1915	3
1916	2
1917	4
1918	2
1919	1
1920	2
	—
	21

from 1900 to 1920 in registration, the reports of the medical examiner and the United States census, also the total number of convictions for each year. The fact that from 1900 to 1920 there have been 2147 deaths from homicide in Massachusetts with but 599 convictions seems noteworthy. The comparative figures show a decided improvement in the accuracy of the general statistics. These figures, of course, do not include the very large number of deaths from unknown causes, many of which are undoubtedly murders.

One naturally associates the greatly increasing murder-rate up to 1916 with the increase in immigration during this period. Table

V gives a compilation of data from the more complete medical examiner's report. The increased use of firearms is strikingly demonstrated in this table. Other statistical data is so inadequate that deductions are scarcely possible.

Table VI shows the number of executions since 1901 when electrocution was introduced. This form of violent death seems to be decreasing. Table VII shows the extent to which probation has been used in these cases.

The 100 cases studied include all admissions to the Massachusetts State Prison at Charlestown for killing, running backwards from July 1, 1923.

1923	17
1922	29
1921	23
1920	20
1919	11

The degree of murder for which they were convicted is as follows: Manslaughter, 58; second degree murder, 39; first degree murder, 3.

Little significance is to be attached to the crimes for which they were committed, for while nearly all are indicted for a more serious offence than it is supposed they committed, the administrative exigencies of the district attorney's office frequently result in a barter by which a plea is accepted for a less serious crime than is known to have been committed. To illustrate: Case 19 went into a store, shot down the proprietor, and robbed him, an aggravated case of first degree murder, yet a plea of second degree murder was accepted. Case 40 planned for several days to kill his rival, finally lay in wait for him and killed him, yet a plea of manslaughter was accepted. Five killed their victims in committing a robbery, yet there were but three first degree convictions in the series. So, little notion of the underlying motive can be gained from the degree of murder for which they were convicted. The difficulty of getting a first degree conviction involving capital punishment is very widely believed to account for the frequency with which a guilty plea of second degree murder is accepted.

NATIVITY.

The study of the nativity of the series shows 67 to have been born in foreign countries, and 33 in the United States, thus nearly the situation in the community at large. (Table VIII.) Of course, it should be borne in mind that the larger number of adults among the foreign-born makes this disparity less marked. There were 10 negroes and one Jew in the series.

TABLE VIII.

NATIVITY.

United States	33
Canada and British Provinces	4
Ireland	1
Jamaica	2
Cape Verde Islands.....	1
Portugal	1
Italy	41
Greece	4
Armenia	1
Turkey	1
Syria	3
	— 52
Austria	2
Finland	1
Russia	1
Lithuania	1
Poland	2
China	1
	— 7
	100

The nativity of the parents shows a similar distribution. (Table IX.) But 22 fathers and 24 mothers were born in the United States, while 15 of the series were born in Massachusetts, but five had fathers born here and four, mothers, and but two had both father and mother born in Massachusetts. About 55 per cent of the population of this state were born in Massachusetts, a sharp contrast with the 15 per cent of this series. Likewise, while little over 3 per cent of the population of Massachusetts, are Italian, 41 per cent of this series were born in Italy. Ten per cent are

negroes contrasted with a little over 1 per cent in the state. While 5.77 of our population were born in Ireland, but one of the series was born there. One frequently hears murder explained on the basis of race. The "hair-trigger" temperament of the Italians is proverbial. The high murder-rate in Italy has been used to prove this point. Yet it is remarkable that no Italian-American is to be found in this series. This would tend to place murder by Italians

TABLE IX.

NATIVITY OF PARENTS.

FATHERS.		MOTHERS.	
United States	23	United States	24
Canada and British Provinces...	8	Canada and British Provinces...	9
England	1	England	2
Ireland	4	Ireland	4
Jamaica	2	Jamaica	2
Cape Verde Islands	1	Cape Verde Islands	1
Portugal	1	Portugal	1
Italy	41	Italy	41
Greece and Crete	4	Greece and Crete	4
Armenia	1	Armenia	1
Turkey	1	Turkey	1
Syria	3	Syria	3
Austria	1	Austria	1
Finland	1	Finland	1
Russia	1	Russia	1
Lithuania	1	Lithuania	1
Poland	2	Poland	2
Galacia	1	Galacia	1
Germany	1		
West Indies	1		
Unknown	1		

as cultural rather than racial. Lombroso⁸ calls attention to this fact in the study of homicides in Italy, from 1881-83. Sixty-two per cent were illiterate, 37 per cent able to read and but .12 per cent among the more highly educated. Dr. Henry M. Swift, in his study of the inmates of the Maine State Prison at Thomaston, found that many murders were committed by native stock of low cultural level. Analysis of Table X shows that in the '90's the Irish contributed many of the murderers, but this same chart shows that this race has been gradually replaced by the Italians. In other words, it

TABLE X.

NATIVITY OF MEN SENTENCED TO MASSACHUSETTS STATE PRISON FOR MANSLAUGHTER AND MURDER.

Massachusetts	2	2	1	3	1	4	7	2	2	2	3	4	2	1	4	2	1	2	6	3	2	4	5	2	4	3	4	4	2	4	2	1	4	
Other states..	..	1	1	2	4	4	1	..	3	..	2	2	1	2	1	1	3	5	1	..	3	1	2	6	1	3	..	3	7	3	7	3	5	5
Canada and Br. Prov.	..	1	..	..	..	1	1	2	..	1	3	1	..	2	3	1	2	..	1	..	2	2	1	1	1	1	1	..	1	..	1	1	1	1
England.....	..	..	2	..	..	1	..	1	..	2	..	..	..	..	..	..	1	..	1	1	..	1	..	1	..	1	..	1	..	..	..	..	..	..
Ireland.....	1	1	6	1	2	2	..	6	3	..	1	..	..	..	1	2	2	1	2	1	1	1	..	1	..	..	..	..	..	..	..	..	..	..
Scotland.....	..	..	..	1	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Jamaica.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
W. Indies....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cuba.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Cape Verde Islands	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Austria.....	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..
Hungary.....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Finland.....	..	..	..	1	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Sweden.....	..	..	..	..	..	1	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Germany.....	..	..	1	..	..	..	..	..	..	..	..	..	1	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Switzerland...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Russia.....	..	1	..	..	..	..	..	..	..	..	..	..	2	..	3	..	1	..	1	..	1	..	1	..	4	..	1	1	..	..	..	..	..	..
Lithuania.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Poland and Galacia	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	1	..	1	1	1	1	1	..	..	..	..	..	..	..	..	1	..	..
Portugal.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..
Italy.....	2	1	..	2	2	3	1	1	..	1	..	4	4	3	3	5	6	4	8	14	6	10	13	9	7	18	10	8	8	5	13	10	11	..
Greece and Crete	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	1	..	3	..	1	..	3	..	..	..	..	..	..	..	..	..	..
Other European countries	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Asia.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..
Armenia.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..
Turkey.....	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	1	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..
Syria.....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..
India.....	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
China.....	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South America....	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Miscellaneous	..	..	..	2	..	2	..	1	..	1	1	..	..	..	..	..	..	..	..	..	4	5	5	8	6	5	..	..	..	..	..	..	..	..
Years.....	1880	90	91	92	93	94	95	96	97	98	99	1900	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22

appears that recent immigrants, illiterate and unskilled, tend to commit acts of violence regardless of their race. The almost entire lack of Russian Jews is remarkable.

ALCOHOL.

Alcohol appears as a very prominent factor. Twenty per cent were drunk when the crime was committed; seven so drunk that they have little recollection of the act. Fourteen others had been drinking and the remaining 66 deny alcohol at the time of the murder. Table XI shows the habits of this group as regards alcohol and tobacco.

TABLE XI.

HABITS.

Drink	5
Drink and smoke	43
Drink and chew	1
Smoke and chew	2
Drink, smoke and chew	19
Smoke	16
None	4
Unknown	10
<hr/>	
Total	100

AGE.

Ages are shown in Table XII. For purposes of comparison, the ages of a group previously studied are given in parallel columns.^a

TABLE XII.

PREVIOUS GROUP.		PRESENT GROUP.	
Years.	No.	Years.	No.
17-20	12	Under 21	2
21-26	33	21-25	20
26-30	23	26-30	25
31-35	13	31-35	17
36-40	9	36-40	16
41-45	5	41-45	10
46-50	5	46-50	5
51-55	5	51-55	2
56-60	0	56-60	2
61-65	2	Unknown	2

The age of this group is considerably greater than that of the previous group. The ages are concentrated in early middle life being fewer at each end of the scale than in the whole prison group. The Massachusetts group appears to be older than the New York group as described by Lawes.

DOMESTIC STATUS (TABLE XIII).

There is a larger percentage of married men in this series than in the previous series.¹ This fact may be in part explained by the greater age of the group, but the fact that so many killed their wives or their lovers shows that while marriage may have a

TABLE XIII.

DOMESTIC STATUS.

PREVIOUS GROUP		PRESENT GROUP.	
Married	32	Married	49
Married but separated	9	Single	38
Single	57	Married twice	4
Widowers	5	Widowers	8
Divorced	4	Doubtful	1

stabilizing effect on crime in general, it increases the hazard as far as murder is concerned.

EDUCATION.

There is a much greater degree of illiteracy in this murder group than in the previous group. Twenty-five per cent of the series could neither read nor write, in contrast with 8 per cent of the previous series. (Table XIV.) Of course, this lack of education is to be expected with so large a percentage of foreign born.

OCCUPATION.

The occupational record of the present group is quite different from that of the previously studied prison group. While there is an excess of unskilled labor, this group does not show a large number of shiftless, irregularly employed individuals.

TABLE XIV.

EDUCATION.

PREVIOUS GROUP.		PRESENT GROUP.	
No education; can neither read nor write.....	9	None	25
No education; can read and write.....	1	Less than one year.	6
Evening school only; can read and write.....	1	One year	7
Common school, two years.....	1	Two years	4
Common school, five years.....	1	Three years	6
Common school, six years.....	1	Four years	8
Common school, seven years.....	1	Five years	6
Common school, nine years.....	1	Six years	6
Common school, ten years.....	2	Seven years	6
Grammar school, 3rd grade.....	3	Eight years	11
Grammar school, 4th grade.....	5	Nine years	5
Grammar school, 5th grade.....	7	Ten years	2
Grammar school, 6th grade.....	2	Seventeen years ..	1
Grammar school, 7th grade.....	10	Unknown	2
Grammar school, 8th grade.....	13	HIGH SCHOOL.	
Grammar school, 9th grade.....	6	One year	1
Grammar school graduates.....	6	Two years	1
High school, one year.....	2	Three years	1
High school, two years.....	7	Four years	1
High school, three years.....	3	High school and	
High school, four years.....	2	business school..	1
High school graduates.....	3		
High school and business college graduates....	1		
High school, two years and business college...	1		
High school, three years and business college..	2		
High school graduates and medical school two			
and one-half years.....	1		
High school graduates and college one year...	1		

TABLE XV.

RELIGION.

PREVIOUS GROUP.		PRESENT GROUP.	
Catholic	57	Catholic	71
Protestant	40	Protestant	14
Greek orthodox	2	Greek	5
Jewish	6	Jewish	1
Mohammedan	2	Mohammedan	1
		None	8

TABLE XVI.

OCCUPATION.

Auto mechanic	5	Meat packer	1
Barber	2	Machinist's helper	3
Boiler maker	1	Metal worker	1
Butcher	1	Owner ice cream parlor	1
Carpenter	1	Painter	1
Chauffeur	1	Peddler	1
Clerk	2	Pressman	1
Coal heaver	1	Prohibition agent	1
Cook	3	Proprietor of garage	2
Dishwasher	1	Sailor	6
Electrician	3	Shoe maker	1
Farm hand	1	Shoe worker	6
Grocer	1	Soldier	1
Jeweler	1	Stenographer	1
Laborer	30	Tailor	1
Mill operative	8	Teamster	1
Machinist	3	Tannery worker	1
Machine operator	2	Waiter	3

CRIMINAL RECORD (TABLE XVII).

Popular fancy usually represents murder as being a final culmination in a criminal career. Lawes remarks on the error of such a judgment.⁸ Of our group 50 had never been arrested before in their lives and of those having one arrest, many were for minor offences such as gambling on the Lord's Day and violation of automobile regulations. The vast majority of those with several previous arrests have committed murder as a subordinate crime to stealing.

TABLE XVII.

CRIMINAL RECORD; NUMBER OF ARRESTS.

PREVIOUS GROUP.		PRESENT GROUP.	
One	19	One	23
Two	11	Two	10
Three	10	Three	3
Four	10	Four	4
Five	8	Five	3
Six	7	Six	1
Seven	2	Seven	1
Eight	4	Eight	3
Nine	1	None	50
Indefinite	6	?	2
None	28		

MOTIVES.

It has been previously said that murder represented a clash of the selfish interests of individuals. Some idea of motive can be gained by analysis of the situations which have resulted in murder.

Murder secondary to some other crime.....	21
Quarrel over a woman.....	33
Result of insane delusions.....	2
Miscellaneous quarrels.....	30
Quarrels over money.....	9
Automobile deaths.....	4
Officer making arrest.....	1

It has not been possible to reproduce the exact emotional state of the individual at the time of the act. It is very apparent that there is an element of confusion at these emotional heights which makes the statement of many individuals, that they do not know what happened, perfectly true. One gets the impression, however, that in the murders taking place during a fight, the element of fear is often more important than the element of rage. Further insight as to the situations resulting in murder may be gained from investigation as to who got killed.

TABLE XIX.

RELATION OF VICTIM TO MURDERER.

Friend or associate	40	Victim of blackhand	1
Wife	8	Boss	2
Mistress	5	Sweetheart	2
Brother	1	Daughter's lover	1
Rival	3	Alcohol customer	1
Wife's lover	3	Step-son	1
Unknown man by auto	4	Patient	1
Unknown man by prohibition agent	1	Friend of wife	2
Husband of lover	4	Brother's widow	1
Victim of robbery	12	Landlady	1

Certain special groups stand out with such clearness as to warrant analysis. First among these come the Italians, of whom there were 41, of whom 19, or 46 per cent, were illiterate, contrasted with 25 per cent in the series. Twenty-nine, or 70 per cent,

had no previous arrests, contrasted with 50 per cent in the series. In other words it is not Italians, as such, who commit murder, but a special type of Italian of low cultural level, leading a primitive life, reacting in this primitive way. As we study these cases, we do not need the hypothesis of mental disease to understand the crime. For instance:

CASE 24.—Age 34. Married. Illiterate. No previous arrests. A laborer who had worked for the past three and a half years on one job was talking with a friend on his own door-step. A third party came up. A dispute arose in which all three took part. There were blows and one man was killed in the *mêlée*.

CASE 42.—Age 42. Born in Italy. Six months' schooling. No previous arrests. Playing cards with a group of friends. A dispute arose over a pot of \$160 which led to a general *mêlée*. There were blows then shots were fired and one man was killed.

CASE 48. Age 45. Born in Italy. Laborer. No schooling. No previous arrests. Playing cards with party. Drank wine. Quarrel over money loan. Knives were drawn. One man died from wounds.

But two of the 41 killed their wives and this when they were discovered in infidelity. Thirty-four were committed in a fight. Thirty-seven represented emotional outbreaks. One was insane, and but three committed the murder in connection with some other crime.

Of the 10 negroes of the series, but one was born in Massachusetts, he claiming to be of Stockbridge Indian stock. Six were born in Southern states, two in the West Indies, and one in the Cape Verde Islands. One was a waiter, one a cook, and one a porter. Six of the 10 murders were committed in quarrels over women, four killing their wives, one his mistress, and one his rival. Four were drunk. Five could not read nor write. The sixth grade was the highest attained by any. Eight had previous arrests and three had served prison sentences. Nine represented emotional outbreaks, the other one being associated with a man who killed in a robbery.

The 15 born in Massachusetts represent a different type. Three had been to high school, six to the eighth grade, three to the seventh, one to the fourth, one had one year, and one was in an ungraded school. All had some industrial training. Twelve had been previously arrested, and six had served sentences. Eight killed

in a hold-up. One ran down somebody in an automobile. One killed an officer in resisting arrest. Four killed women, but none killed their wives. Five were drunk and three had been drinking. Two were feeble-minded, two insane, and one was an abnormal personality. Several were inferior types.

Of the 34 alcoholic cases, 14 were illiterate. Eight could be classed as chronic alcoholic. Two were insane. One was feeble-minded. Thirteen were born in Italy, nine in Massachusetts, five in other parts of the United States, three in Poland, one in New Brunswick, one in Syria, one in Finland, and one in the Cape Verde Islands.

MENTAL DISEASE.

Twenty of the series showed well marked departure from normal mental condition, nine being definitely insane, three feeble-minded, eight presenting personality disorders of so gross a character as to limit their responsibility. Twenty-five per cent were born in Massachusetts. Forty-five per cent in the United States. But 30 per cent in Italy. In general, the character of the murder did not differ from that of the rest of the group, but two being definitely and solely due to insanity. A brief abstract of these cases is given rather than a discussion. This seems the best way to illustrate the tremendous difficulty of determining responsibility before trial by the ordinary procedure. It will be noted that some of these were frankly insane before trial, some were border-line cases, and other developed a psychosis after conviction. Others showed a degree of mental impairment usually considered consistent with legal sanity. From a review of these cases it would seem desirable to use state hospital observation more frequently than at present. No new laws are needed, this being purely a matter of improved legal and judicial administration. The general character of those showing limited responsibility is such that it would seem much wiser in attempting to protect society, to look upon limited responsibility as an aggravating, rather than a mitigating, circumstance.

There were several cases in which the degree of murder was obviously cut down by the jury on account of an insanity plea.

CASE 19.—Age 56. Born in Massachusetts, of excellent parentage. Attended high school for two years. Has never had regular employment but what work he has done has been of a clerical nature. Has had a great

many previous arrests, mainly for stealing. Addicted to drugs and alcohol. Once while serving sentence, he was adjudged insane and was transferred to a hospital for the insane.

He held up a store-keeper and killed him. Many psychiatrists were employed by both sides and all agreed that he was a psychopathic personality and a border-line case. Plead guilty to second degree murder and a sentence of life imprisonment was imposed. This met with some adverse comment from the public and the press.

This man was undoubtedly socially irresponsible and a permanent menace to society. In prison there was no conduct-disorder or objective evidence of mental disease. He has acquired the reputation of being a homo-sexual case.

This case well illustrates the fallacy of trying to handle a personality disorder by primitive methods and by limited terms of imprisonment.

CASE 27.—59 years of age. Widower. Born in Massachusetts. Of humble parentage. Attended school but one year. Neglected childhood. Worked for greater part of his life in shoeshops. Great many arrests for drunkenness. Living with mistress; both grossly alcoholic. She left him for another. He was extremely jealous. Became nervously upset. Did not eat nor sleep. Finally lay in wait for her and shot her as she left her work. He was examined by psychiatrists for the state and was pronounced sane. Upon his admission to the state prison, he was found to be a peculiar effeminate individual of low intelligence, actively hallucinated and with delusions of persecution. Was committed to Bridgewater State Hospital, where he appears to have chronic alcoholic insanity.

While it is difficult to say at just what time this man became insane, it is obvious that he should have been recognized as a mental case and the proper procedure would have been to have committed him to Bridgewater for prolonged observation prior to his conviction. The social problem involved was of long standing, such situations being neglected until a serious crime is committed.

CASE 28.—Age 29. Born in Greece. Two years' schooling. Reads and writes Greek. Denies previous arrests. History unobtainable. Went to work as a dishwasher. Noticed that his behavior was peculiar and was discharged. Stabbed the boss and killed him. He was examined by psychiatrists of the state commission, who recognized his peculiarities and recommended that he be sent to a hospital for observation. However, he was convicted of manslaughter and sent to state prison. Upon admission was apathetic and indifferent. Stood about making no attempt to work. Suspicious and apprehensive. A few days after admission he was committed to the state hospital at Bridgewater, where he has since remained. This case, like 27, was quite obviously one of mental disease, and the recommendations of the psychiatrists should have been followed, by which he would have been sent to Bridgewater for observation.

CASE 40.—Age 22. Born in Ireland. Attended school to fifth grade. Had been in America about two years working as a day laborer. No previous

arrests. Had been thrifty and saved his money. Was courting a girl who lived in his boarding-house and intended to marry her, but a rival was more successful and he became intensely jealous. Finally she told him that she intended to marry the rival. He became disturbed, spent several sleepless nights, stayed away from work, and states that he continually saw the face of this man before him and that something seemed to continually say, "Kill him." Finally he lay in wait for him and struck him from behind with an ax. It killed him immediately. Afterwards he mutilated the body with a milk bottle.

He was examined by psychiatrists appointed by the department of mental disease, who, while unable to say definitely that patient was insane, reported to the court that he appeared to be suffering from mental disease and recommended hospital observation. A plea of manslaughter was accepted and patient was committed to state prison. Since admission has been seclusive, rather indifferent, and contrary to his usual custom, is religious and is frequently seen in prayer about the prison. Examination does not reveal conclusive evidence of insanity but his attitude and manner and conduct suggest dementia precox.

CASE 44.—Age 28. Single. Born in Massachusetts. Attended school to the seventh grade. A machinist's helper. No previous arrests. Became enamoured with a lady of his acquaintance, who refused to marry him. He became more and more unsteady, was nervously upset, unable to eat or sleep. Followed her about. Became more and more emotional and religious. One day he confronted her at her work, demanded that she marry him. She refused, whereupon he shot her and then shot himself. He was unconscious for a while. Examination by psychiatrists, who pronounced him sane. Convicted of manslaughter. Upon admission to prison was markedly depressed, uncommunicative, developed pronounced hallucinations and was committed to Bridgewater. Subsequent operation for removal of bullet resulted fatally. Autopsy showed tumor of the brain. From the evidences now at hand, it appeared that this man was insane at the time of the murder and should have been sent to a hospital for the insane.

CASE 56.—Age 49. Married. Born in Austria. Completed common schools and attended engineering school, from which he graduated. Marine engineer. Finally married and bought a garage, which he operated. No previous arrests. His wife had a son by a previous marriage and domestic life was continually marred by violent quarrels, the son always taking the part of the mother. One day, following a violent quarrel with his wife, patient seized an ax and struck his step-son dead as he slept. Examination while awaiting trial showed marked emotional instability, depression and agitation. However, he was considered sane and convicted of second degree murder and sentenced to state prison. Upon admission was still markedly depressed; suggested manic-depressive insanity. Sleep was disturbed. Appetite poor. Considerable loss of weight. Frequently seen crying. This continued for some months, after which he cleared up, but still appears to be

a neurotic individual with marked emotional instability. At the present time it would appear that he was an emotionally unstable individual who lost his self-control through stress of domestic conflict, and that while mentally upset, he was probably sane and should be classified as a personality disorder.

CASE 61.—Age 22. Single. Born in Italy. Teamster. No schooling. No previous arrests. While playing cards with a group of friends, the host refused to give him a drink, saying that he had already drunk too much. This led to quarrel in which weapons were used, and patient shot assailant. Convicted of second degree murder.

Upon admission to state prison showed no unusual symptoms and his crime was believed to be due to his low cultural level plus alcohol. Shortly after his admission to prison, without provocation, he stabbed and killed another prisoner. The other prisoner was hardly known to him and no possible motive was ever found. He became almost mute and refused to discuss the crime. Investigation showed he had had persecutory delusions for some time prior to the first crime. He was sent to Bridgewater State Hospital, where he is regarded as a chronic case of mental disease.

CASE 63.—Age 26. Single. Born in Massachusetts. Attended school for eight years, but made but little progress, being in an ungraded class. Had worked at various odd jobs. Two previous arrests, one for being drunk and one for disturbing the peace.

With two other boys he went into a store and held up the proprietor. As they were going out, the proprietor pursued and overtook patient. A struggle ensued in which the patient shot and killed the proprietor. Experts for prosecution testified that patient was sane and not feeble-minded. Experts for the defense testified that he was feeble-minded and had the responsibility of a feeble-minded person, whatever that might be. He was convicted of second degree murder and sentenced to life imprisonment.

Since admission to prison, diagnosis of feeble-mindedness confirmed. Intellectual level between eight and nine years.

CASE 67.—Age 25. Single. Born in Italy. Attended school for six years and was employed as a sheet-metal worker. No previous arrests. Was convicted of killing a relative. Experts for the prosecution testified that he was sane, and for the defense, that he was insane.

Upon admission to prison he was actively hallucinated and expressed delusions of persecution. Had moved from place to place for three years prior to murder, trying to escape his persecutors, and finally decided to take matters into his own hands.

He was committed to Bridgewater, where he appears to be a chronic case of mental disease.

CASE 72.—Age 31. Married. Born in Italy. No schooling. Worked as a day laborer. No previous arrests. History of convulsions and chronic alcoholism for many years. With an associate he killed and robbed another man

by a blow on the head. Convicted of second degree murder and sentenced to life.

Upon admission was dull, showing well-marked intellectual inferiority. Subject to epileptic convulsions. Shortly after found to have hallucinations and delusions and was committed to Bridgewater.

CASE 79.—Age 27. Single. Born in Connecticut. Attended school to the eighth grade, this in a reform school. Had made no industrial progress, worked at various odd jobs, longer as a sailor than anything else.

At the time of his arrest was working temporarily as an attendant in a state hospital. Served two years in reform school as a stubborn child. Convicted of manslaughter following an assault upon a patient. Upon admission was found to be a peculiar paranoid personality, perhaps insane. Morbidly contentious, markedly unstable. Paranoid ideas suggesting delusions.

CASE 80.—Age 37. Married. Born in Italy. Attended school one year. Had worked as a laborer for many years and finally built up a grocery business in which he was successful. One previous arrest for disturbing the peace.

Intefered in a quarrel between his brother-in-law and another man. The other man slapped patient's face, whereupon he shot his victim. Was convicted of manslaughter and sentenced to state prison. Upon admission was markedly depressed. Considered that he had been unjustly convicted. Did not sleep, refused food. Developed mild paranoid ideas. This lasted two or three weeks with recovery. Since, he has shown no signs of mental disease. Considered a prison psychosis.

CASE 82.—Age 40. Married. Born in Prince Edward Island. Attended school in ungraded class. Worked as a waiter. Three previous arrests, two for drunkenness and one for assault. Domestic troubles for many years. Wife finally left him for another.

He located her and went to see her. Found her in the arms of his rival, and thereupon shot the man. Was convicted of manslaughter and sentenced to state prison. Upon admission was markedly depressed. This increased until he became hypochondriacal and rather paranoid. Stayed in bed. Committed to Bridgewater, where he appears to be a chronic case of mental disease.

CASE 86.—Age 42. Single. Born in Italy. No schooling. Reads and writes a little Italian. Worked as a day laborer. One previous arrest for assault.

While playing cards with a group of friends, drank to the extent of being intoxicated. A quarrel took place, several shots were fired. A number of players were wounded. One man was killed. Patient was convicted of manslaughter. Question of insanity was never raised. When admitted to prison was markedly depressed. Said, "I might as well be dead as here." Fourth day after admission jumped from cell tier sustaining a fractured skull. Died three weeks later at Bridgewater State Hospital.

CASE 87.—Age 29. Born in Poland. Single. Attended school one year. Worked steadily as a weaver. No previous arrests.

For some time had been forcing his attentions upon a girl. She had apparently never encouraged him and had always repulsed him. He became more and more troublesome. One night he attended a dance where she had gone with another man and stopped her as she left the hall. A number of men interfered, among them the girl's escort. Patient shot the girl. Was examined and sent to a state hospital for observation, where he was held for 14½ months and then pronounced sane. Very much depressed and made at least one suicidal attempt. Convicted of second degree murder and given a life sentence. Upon admission to prison was markedly depressed. Many ideas of self-justification. Has never had any insight. Gives impression that girl's refusal to marry him is, in his mind, adequate justification for his act. After several years of observation has not changed substantially. It is still difficult to say whether he is a neurotic individual or whether he has a psychosis.

CASE 88.—Age 22. Born in Italy. Attended school to fifth grade. Had worked irregularly as a pressman. Industrial record poor. One previous arrest for gaming on the Lord's Day.

At a dance in a rough section the police interfered and patient shot an officer without personal provocation. Was examined prior to trial and reported sane. Was convicted of second degree murder and given a life sentence. Upon admission to prison was found to be of low intelligence, probably a moron with a decided paranoid personality.

CASE 90.—Age 57. Single. Born in Pennsylvania. Attended school to eighth grade. Repeated one grade. Had worked as a state hospital attendant. Served 90 days in the house of correction for larceny and three and one-quarter years in the Wisconsin State Prison for highway robbery.

Patient and his mistress were working for an aged man. They were convicted of killing him by a blow on the head with a hammer for purposes of robbery. Patient has always said that the victim was killed in a struggle caused by the jealousy of his mistress. Convicted of second degree murder and given life sentence.

Upon admission to prison was found to be of inferior physique. Speech puerile. Intellectual level bordering on feeble-minded. Was considered case of constitutional inferiority. Some months after admission made half-hearted attempt at suicide. Very much depressed and nervous. Committed to Bridgewater State Hospital.

CASE 94.—Age 56. Married. Born in Vermont. Attended school to twelfth year. Laborer all his life. Five previous arrests for larceny, cruelty to animals, assault and drunkenness. Had been a hard drinker all his life, this resulting in poverty and domestic strife.

Had been on an unusually long drunk and wife left him, going to work as a servant in the house of another family. The patient, when drunk, went to this house, insisted upon seeing his wife. Her employer interfered and

patient shot him. Claims amnesia for affair and there is no question but that he was badly intoxicated. The question of his sanity was not raised. He was convicted of second degree murder.

Upon admission to state prison he showed the usual evidences of chronic alcoholism. While not definitely feeble-minded, he was of a very primitive type. One year after admission was found to have auditory hallucinations and delusions of persecution. Committed to Bridgewater State Hospital, where he appears to be a chronic case of mental disease.

CASE 96.—Age 45. Married. Born in Vermont. Attended school for ten years. Worked as a mechanic. No previous arrests.

For several months had been ill with what appears to have been mid-life depression. Mild persecutory ideas. Somewhat self-accusatory. Had an idea that his brother-in-law and his wife were working against him. One night he killed his brother-in-law with a ball bat as he slept.

Question of his sanity was not raised at the trial, patient stating that his lawyer advised against this, saying that he would be released from state prison more quickly than from the Bridgewater State Hospital.

Upon admission to prison was found to be definitely insane. This is a case of an obviously insane man, his crime due directly to his delusions. Was convicted of second degree murder without question of mental disease.

CASE 99.—Age 24. Single. Born in Massachusetts. Attended school to seventh grade. Said to have been backward in school. Factory hand. A great many arrests for drunkenness. Never sentenced. One illegitimate child. Came home one night stupid drunk and strangled landlady, then slept in drunken stupor. Has always claimed to have no memory of crime and no motive was ever found. Convicted of manslaughter.

Examined prior to trial and pronounced sane but feeble-minded. Upon admission to prison was found to be definitely feeble-minded. This had been complicated throughout his life by drunkenness.

This case had been a serious social problem for many years. It received attention only after the commission of a serious crime.

SUMMARY.

But few comments are necessary in summarizing this study. It is obvious that statistics are on the whole rather inadequate, but as far as one can learn from a study of such, Massachusetts has a rather low rate for the United States and a high rate compared with European countries. It also appears that although there was a definite increase in homicide for the 10 years prior to the war, figures since show no substantial increase in the last 40 years. In general, murder in Massachusetts may be looked upon as an unusual social phenomenon attributed, for the most part, to the low

cultural level of immigrants received, and to a less extent to mental disease and unfortunate environmental conditions. The influence of the latter two upon the individual tends to simulate the first. As individuals, murderers tend to be of lower cultural level, but show a less degree of moral turpitude than thieves and sex offenders.

BIBLIOGRAPHY.

1. Man's Judgment of Death, Lewis E. Lawes. G. P. Putnam's Sons, New York, London, p. 112, Table XXVI.
2. Lawes, *Ibid.*, p. 85, Table II.
3. The Kind of Men in State Prison, A. W. Stearns and John Chapman. Reprinted from the Journal of Abnormal Psychology, Boston, December, 1920, and March, 1921, p. 335.
4. Lawes, *Ibid.*, p. 100, Table XV.
5. Crime: Its Causes and Remedies, Lombroso.
6. Stearns, *Ibid.*, p. 336.
7. Stearns, *Ibid.*, p. 337.
8. Lawes, *Ibid.*, pp. 49-53.



GENERAL PARALYSIS OF THE INSANE DURING SENESCENCE.*

By IRA A. DARLING, M. D.,

Warren State Hospital, Warren, Pa.

General paralysis of the insane has been so thoroughly studied and is so well understood by neuropsychiatrists that there is little chance of bringing to light entirely new facts. The mental, physical, neurological and laboratory characteristics of the disease are usually easily recognized and are constant enough to permit positive diagnosis in the majority of cases, provided a complete and careful examination is possible. The greatest single aid that has been added to our diagnostic machinery in recent years is the routine examination of the blood of all patients by means of the Wassermann test. This routine measure serves as an excellent check on physical examinations and not infrequently draws the attention of the examining physician to some of the finer physical changes that otherwise might not be properly evaluated. If examinations of the spinal fluid could be added to our routine there would be little chance of allowing a case of general paralysis of the insane to pass unrecognized. Because of the unpleasantness associated with lumbar puncture and the occasional severe and persistent headaches that sometimes follow the operation, routine examination is not desirable. At the Warren State Hospital it is the policy to take a specimen of the spinal fluid if the blood Wassermann test is positive, if there is a history of syphilis or of convulsions, if the physical examination shows any indication of syphilis, if the patient is comatose, or if there are any indications of organic brain changes. The majority of patients admitted with organic brain symptoms, not syphilitic, are approaching the senile period and have sclerotic degenerations of the central nervous system. Theoretically the differentiation between psychoses with cerebral arterio-sclerosis and neuro-syphilis of the paretic type is very simple; practically there is an opportunity for an occasional error. The

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

mental changes and physical signs of paresis developing in mid-life are very characteristic because other degenerative diseases of the brain are uncommon during this period. As individuals become older cerebral sclerosis becomes more and more common and injury to the brain and spinal cord associated with this sclerosis may be roughly comparable, so far as areas affected are concerned, with that caused by general paralysis. Therefore, the mode of onset and the mental picture of the two conditions may be, and often is, very similar. In other words, knowledge of the patient's age may be essential before the history given by the family arouses suspicion as to the true character of the disease. The more pathognomonic physical evidences of general paralysis of the insane are pupillary changes, reflex abnormalities, speech defects, changes of facial expression, loss of manual dexterity, and seizures. When the Argyll-Robertson type of pupil is found or when the pupils are rigid syphilis is, of course, always assumed responsible until proof to the contrary is obtained. It is unfortunate for diagnostic accuracy that the less characteristic pupil changes are more commonly found, for the average patient with paresis will have pupils with irregular margins that react imperfectly to light or there will be an inequality of size associated with these two signs. Similar minor pupillary abnormalities are frequently found in elderly people without syphilis and this makes it necessary to exercise much care and judgment in the interpretation of pupil symptoms during the senile period. Divergences from the normal in the knee jerks such as hyperactivity, differences between the two sides, and even sluggish reactions occur with great frequency in both paresis and sclerotic diseases of the central nervous system. Here again it is a matter of estimating the degree of abnormality and exercising judgment as to the true significance of the symptom. The tone of voice with the peculiar slurring, elision of speech, in typical cases of paresis, is quite characteristic. In hospital practice this aid to diagnosis often fails to be of great importance because many old folks are admitted after consciousness has become deeply clouded and the voice so weakened and husky that its peculiarities cannot be properly estimated. Furthermore the trembling, feeble voice of the aged sclerotic may closely imitate that of the paretic. Facial relaxation, loss of manual dexterity and seizures are about equally common in the two conditions. The work of Hamilton¹ on the spinal cords of old people and of

MacDonald² on focal brain lesions in paresis are excellent presentations of the pathologic anatomy responsible for these clinical similarities. It would be possible to cite innumerable cases illustrating these points. I have selected three examples.

Mr. A was admitted to the hospital at the age of 59, having been an invalid on account of uncompensated valvular heart disease for five years. Shortly before admission he became very irritable and developed grandiose delusions. When examined at the hospital he was partially disoriented, emotions were very unstable, and he was quite euphoric. There was motor incoordination, a coarse tremor of the hands and tongue, slurring and elision of speech, and definite abnormality of the pupillary reaction to light. Associated with the heart disease there was considerable œdema extending above the knees. The knee jerks could not be elicited but perhaps this was on account of the œdema. There was a clear history of having acquired syphilis at the age of 37. Examinations of the blood and spinal fluid gave no evidence of syphilis. The postmortem examination showed cerebral sclerosis and none of the usual changes found in general paralysis of the insane.

Mr. B was admitted to the hospital when 64 years old. He lived on the paternal farm until it became his by inheritance at the age of 40. After he assumed management of the estate it was quickly frittered away and he became more or less dependent upon other members of the family. He used alcohol freely throughout life. When 60 years old he was found unconscious. After this the lower extremities were very weak, and his mentality was impaired. Speech was affected enough to make it difficult for people to understand him. The weakness of the legs improved but the other symptoms persisted. Examination at the hospital showed systemic sclerosis, high blood pressure, chronic nephritis, tremors of the extended hands and tongue, impaired pupillary reaction to light, thick, tremulous articulation, normally active knee reflexes. Consciousness was deeply clouded so he could not cooperate with examinations. Death came 17 days after admission and the postmortem examination showed cerebral sclerosis with no signs of paresis.

Mr. C came to the hospital at the age of 63 with a history of a change of character beginning three years prior to admission. He was said to have become forgetful, suspicious, jealous and irritable. For two years he had been unable to do productive work. For several months he had required aid in the care of his personal needs and had been untidy in habits. Usually he had appeared unhappy and he had spoken of suicide. Two and a half years before commitment he had suddenly developed a weakness of both legs and a defect of speech that made it difficult for the family to understand him. When admitted he was a very feeble bedridden old man. Consciousness was deeply clouded and almost complete dementia made it impossible for him to cooperate with examinations. This series of symptoms occurring in a man from 30 to 50 years old would at once arouse strong suspicions of general paralysis of the insane but with a patient 63 years

old the history and mental picture is just as compatible with an arteriosclerotic brain disease. This patient had pin point, rigid pupils and no knee jerks could be elicited. The Wassermann reaction with the blood was negative. The spinal fluid gave a positive Wassermann reaction and a paretic gold sol curve.

It is doubtless possible for a keen diagnostician to very accurately differentiate general paralysis of the insane from arteriosclerotic mental troubles by means of history, observation of mental characteristics, and careful physical examination. Nevertheless, the two have many symptoms in common and border line cases are sure to occur that will require laboratory tests for positive diagnosis. For those of us whose diagnostic capacity is only average the safest procedure is to make several examinations of the spinal fluid whenever an elderly patient has any signs of organic change in the central nervous system.

Text books published during the last 30 years all agree in the statement that general paralysis of the insane is rare after the age of 60. For example Allbutt and Rolleston's *System of Medicine*³ gives data on 425 cases showing that slightly over 1 per cent develop the disease after 60. In hospital practice it is difficult to exactly determine the age when the first mental symptoms become manifest. There are many causes for this but it is mainly due to the failure of the family to appreciate the significance of the less obvious mental peculiarities and to the frequency of insidious onsets. The age at which hospitalization first becomes necessary is exact and represents a quite definite degree of progress of the disease. It is not rare to have a patient with general paralysis of the insane first admitted to a hospital at the age of 60. Pollock⁴ reports that 6½ per cent of the first admissions in New York diagnosed general paralysis of the insane from 1913 to 1922 were 60 or over. The present report is based on 430 first admissions due to this disease. Thirty-five of these patients were 60 or more years old when admitted to the hospital, therefore, 8 per cent of the patients admitted to the Warren State Hospital on account of general paralysis of the insane belong to this old age group. If, as appears probable, from 6 to 8 per cent of all patients admitted on account of general paralysis are in the senescent period of life it is clear that alertness to separate this group from other organic diseases must become a daily habit. A few interesting observations can be made from the study of the 35 patients ad-

mitted to Warren at the age of 60 or over. A reliable history of the date of infection with syphilis could be obtained in only four cases. The youngest at the time of infection was 49 and the eldest 63. The former had his first mental symptoms 13 years later at the age of 62. The latter old man began to have defects of memory and judgment when 62 years old, became infected with syphilis when 63 and came to the hospital with typical physical and laboratory signs of paresis when 68. The oldest patient of the series is a woman who had her first mental symptoms when 81 and is still living in the hospital at the age of 85. Four patients of this series improved so much that the relatives insisted on taking them home. One of these patients is still alive and has been able to enjoy home life for nearly 10 years; two died a few weeks after leaving the hospital; one has not been heard from. Twelve patients were given some form of anti-syphilitic treatment, the effect of which was quite problematical. Only one of the four that returned home received treatment. Two patients became greatly emaciated before death; one of these had been treated by inunctions of mercury with drainage of the spinal fluid, the other had had no treatment. Two untreated patients had pressure sores while none of the treated were thus affected. Twenty-six patients of this series have died at the hospital; the average duration of life after the first mental symptoms observed by the relatives was about four and one-half years and the average period of hospital residence was a little over five and one-half months. The shortest period of hospital residence before death was two days and the longest nine years. One patient died with a severe cystitis, one never recovered from the sedatives administered just prior to admission, one died during a series of convulsions, and 23 died in a marasmic manner. This is a much smaller percentage of death in convulsive states and as a result of infections than the average for the disease at the Warren State Hospital.

SUMMARY.

1. The differential diagnosis of general paralysis of the insane and psychoses with arterio-sclerosis or somatic diseases may be difficult and depend to a great extent upon laboratory examinations of the spinal fluid.
2. General paralysis of the insane is frequently the cause of the first admission to hospitals of patients 60 or more years old; in this series 8 per cent of all admissions due to the disease.

3. The cases studied in this report indicate that the period of incubation, duration of mental symptoms, and prognosis for periods of improvement is about the same with these old people as for the general average of the disease.

BIBLIOGRAPHY.

1. Hamilton, A. S. A study of the Senile Spinal Cord in Cases of Mental Disease. Boston M. & S. J., 1910, CLXII, 189-196.
2. MacDonald, William. Aphasia and Mental Diseases. Am. Journ. Insanity, 1907, LXIV, 231-240.
3. Allbutt and Rolleston. System of Medicine. 1910. Vol. VIII, pp. 365. Macmillan & Co., Ltd.
4. Pollock, Horatio M. General Paralysis in New York State, 1913-1922. Venereal Disease Information, U. S. P. H. S., 1924, V, 112-116.

DISCUSSION.

DR. WHOLEY.—Dr. Darling's paper deals with a phase of general paresis which is of great practical importance. General paresis occurs, of course, with greatest frequency in early adult life and we are not accustomed to think of it during senescence. While the symptoms of general paresis are typical at all ages, still, because of the identity of many of its symptoms, especially, those of the simple dementing type, with the symptoms of senile dementia, it is more difficult to diagnose at this period of life and more apt to be overlooked. Both the pupillary reflex anomalies and many other reflex changes found in paresis are, of course, commonly found during senility, when arteriopathic changes are so prevalent. On the mental side, the outstanding psychic anomaly, namely, that of dementia is common to both conditions. In my own experience a state of euphoria and ideas of moderate grandiosity have been the most helpful symptoms which have made me suspicious for the existence of paresis during senescence. We have to allow for the different psychological expressions of paresis according to the age of the individual. In a juvenile the content of the hallucinations and delusions if present would be very different from those of middle life and senility. Upon a common background of dementia we will find erected the manifold psychotic symptoms receiving their peculiar coloring according to the age and mental makeup of the individual affected. While paresis occurring during senescence is usually the result of syphilis contracted late in life, we meet with some extraordinary exceptions to this rule. A patient now under my observation, aged 65, contracted syphilis 40 years ago. He presents the unusual feature of the disease affecting his motor neuron system in such a way as to simulate an exaggerated type of progressive spinal muscular atrophy. I mention this case to bring out the point that the presence of syphilis during senescence is important, not only in connection with paresis which has been so ably presented by Dr. Darling, but that its presence must be looked for in connection with a number of other neuropsychiatric diseases of old age.

PROLONGED CONFUSIONAL STATES SIMULATING
DEMENTIA PRÆCOX. DIFFERENTIAL
DIAGNOSIS.*

BY ALFRED GORDON, M. D., PHILADELPHIA.

The problem of dementia præcox is still a matter of considerable hesitation and diagnostic difficulty in a number of instances. The presence of certain symptoms which are encountered in other mental affections and especially their persistence render the diagnosis and consequently the prognosis quite uncertain and embarrassing. Among the psychoses with which dementia præcox may be confounded, confusional states of long duration are particularly liable to mislead. The literature is abundant with examples which were formerly described as cases of confusional insanity but which were proven to be genuine examples of dementia in accordance with Kraepelin's conception. We also meet with examples labeled as cases of dementia præcox but which present all the elements of a chronic confusional condition and which eventually make a complete recovery.

Within the last several years the writer had the opportunity of studying seven such cases and of keeping them under his uninterrupted observation. Before discussing the differential diagnosis, the salient features of each of the cases are presented here for consideration.

CASE I.—M. S., female, 30 years old, during convalescence from attack of acute lobar pneumonia of an unusually severe character and of long duration, suddenly commenced to show slight disorientation in time. Soon a state of agitation set in. Delusive ideas of a mild persecutory character directed towards her relatives made their appearance. With the exception of occasional auditory hallucinations the above condition remained unaltered for a period of three months. Gradually the psychotic symptoms became more and more intense and delusions of the paranoid type came into evidence. Curiously enough, the delusive ideas would at times be totally absent; at another time à propos of the least excitement they would reappear. During that period the disorientation remained and amnesia became

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 3, 4, 5, 6, 1924.

prominent. At times she would forget facts which occurred only two or three hours previously. However, questioned on the same subject at another time, the amnesia would not be present. The patient was largely confused. Each question propounded to her would arouse astonishment and surprise. Sometimes she would become resistive in talking, and acting. On two occasions she became catatonic, and each catatonic state lasted from 3 to 11 days. Throughout her entire mental illness which lasted six months, the confusional state and the disorientation never totally disappeared, but all other phenomena were episodic in character: they would disappear and reappear. Eventually the patient made a complete recovery.

CASE II.—A. S., male, 23 years of age, recovered from an attack of typhoid fever. While he was convalescing, a mild delirious state developed. Since then he gradually became more and more confused and amnesic. His attentive faculty became defective: when spoken to, he behaved as if he did not understand what was said, but as if he were absorbed in some other subject foreign to the question asked. At times he would make a reply in a very irrelevant manner. When reminded of the absurdity of the situation, he would make efforts to correct himself and occasionally succeed. When asked to carry out an act, at times he would do something else and at others he would endeavor to execute it correctly, but only when he would be urged, constantly reminded and encouraged. This psychotic state continued with great variations in intensity during a period of four months. He soon became apathetic and indolent. At that time he developed a stuporous state in which he became totally mute, he had to be fed; he could not take care of himself. The stupor lasted only ten days, after which period the former confusional and disoriented states returned in their totality. This mental condition fluctuated in its intensity. The patient soon developed a short period of automatism, which became substituted by an equally brief period of negativism. During the following two months he showed at different times hostile reactions with regard to his parents, but they were all of brief duration. During the entire illness which lasted 13 months the clinical picture suggested strongly the diagnosis of dementia præcox, but the outstanding feature concerning the shortness of the attacks of the superimposed manifestations, also the variability in the intensity of the basic elements of his affection, namely, the incoherence and confusion, made me hesitate in accepting the definite view of Kraepelin's disease. Further events justified this cautious attitude. Complete recovery followed.

CASE III.—D. T., female, 26 years of age, primipara, had a very difficult and protracted labor. She was confined to bed eight weeks in a state of extreme exhaustion. Rapidly she began to show signs of incoherence in speaking, of disorientation in time and of a mild confusion. For weeks she remained in the same mental state with the exception of an occasional hallucinatory attack. She soon became agitated, could not sleep, would talk to herself, could not take care of herself, became extremely inattentive to her sphincters. All these symptoms varied in their intensity and frequency.

Some days the confusion and agitation would be extreme, other days extremely mild, so that the patient could carry out orders. There was also a certain amount of amnesia, which like the rest was variable and ran parallel with the confusional state. The patient soon became negativistic: she refused to answer questions, to execute the simplest acts. Her attitude became stereotyped in every direction. Her indifference to surroundings became more and more marked. The negativism and stereotypy disappeared at the end of ten days. Apathy and indolence became pronounced. The confusion, lack of attention remained as formerly. The picture of the disease was so far that of hebephrenia with this difference, however, that with the exception of the confusional state all other symptoms were of a transient character. The diagnosis was hesitating for many weeks and months. The patient made a complete recovery at the end of 18 months.

CASE IV.—K. J., female, single, 23 years old, after a prolonged period of preparation for a college entrance, in which she failed, developed a mild confusional state. Insomnia, slight agitation with an impatient attitude towards her sisters were also present. Gradually all these symptoms became more and more pronounced. Soon vague persecutory ideas made their appearance. She became very incoherent, listless and apathetic. Catatonic manifestations at one time, stereotyped behavior later followed. All these symptoms were not continuous. They would appear, disappear and reappear. Their intensity also varied in each attack. At times they would be very brief (only a few hours' duration), at others quite prolonged (of several days' duration). While this fluctuation was in evidence, the confusional element remained present through the entire course of the psychosis. Self-criticism was lacking, the speech was absurd, although at times her replies to questions were correct. She always preserved her astonished, surprised and perplexed expression of the face. The defective attentive power, the defective orientation and adaptation were predominating in spite of the superimposed transient hebephrenic incidents. At the time when the latter were present, the clinical picture was strongly in favor of dementia præcox. The patient made a complete recovery.

CASE V.—J. L., male, 27 years old, after vain search for work, finally obtained a position in a leather factory where he was compelled to do heavy physical labor. Being unaccustomed to such work he soon began to feel unusual fatigue at the end of the day. For several weeks he tried to hold on to the position, but finally he commenced to feel the effects of it. Insomnia, asthenia, agitation, impatience and irritability made their appearance first. He had to go to bed. He soon became apathetic and incoherent. He would talk to himself in the most unintelligible manner. He became confused, presented the characteristic want of attentive power. The memory became defective especially for recent events. There was poverty of judgment and of criticism. Hostility and aggressiveness would be present occasionally, but only for a few hours at a time. On many occasions he showed a negativistic and resistive attitude: refused to answer or to

carry out the simplest order. At times his behavior was stereotyped. He also masturbated violently. It is to be noted however that all these psychotic manifestations through the entire course of the disease which lasted three years were only episodic and their duration ranged from a few hours to seven days as maximum. The disorientation, confusion and the defective attentive power were never absent at any time. However, there was considerable fluctuation and variability in their intensity, but their conspicuousness was predominant. Complete recovery followed.

CASE VI.—M. S., female, 22 years old, hemophilic, had frequent hematemesis and epistaxis during a period of three years. The last hemorrhage was exceptionally profuse. Thromboplastin was used intramuscularly. On the day following the arrest of the hemorrhage, she became restless, anxious and a few days later disoriented and confused. Her memory became faulty. She was depressed and often found in tears. Soon she became delusive, claiming she was magnetized by her older sister towards whom she became very hostile. The enmity was based on the assumption that the sister was more favored by the parents than she. On one occasion she attacked her sister with unusual violence. After this episode her attitude changed. She became unusually quiet and more confused than heretofore. She then became negativistic and resistive. When spoken to, not one word could be obtained from her; but when not addressed to she would speak to herself although unintelligibly. She sits in one place of the room, has her head wrapped up with a muffler and runs away when she is approached. On two occasions she was catatonic during six to eight days. Stereotyped behavior also occurred on several occasions. At that period of her affliction the former delusive ideas have totally disappeared. The above symptoms characteristic of dementia præcox were all transient although some of them lasted sufficiently long to warrant this diagnosis. The further development of events proved that they were only episodic but the fundamental basic condition was confusion with all its special features. It varied in its intensity and degree, nevertheless it was persistent, and characteristic throughout the entire course which lasted two and a half years. Recovery was complete.

CASE VII.—R. S., male, 24 years of age while recovering from a protracted broncho-pneumonia, for which he was bedridden 52 days, commenced to show signs of incoherent speech and mild confusion with disorientation. Towards evening he would be slightly delirious. His sleep was poor. He was restless the largest part of 24 hours. Amnesia was marked. Illusions of identity became quite conspicuous: frequently he would not recognize his parents and sisters and would see his relatives in strangers. Soon the agitation and restlessness became replaced by depression. During this phase, on two occasions he had two periods of a stuporous state, each lasting several days. Two months later he developed negativism and automatism. This episode lasted five weeks. After an interval of two months, during which the former confusional state with its typical fea-

tures was present, he developed a catatonic condition which lasted six days. The diagnosis was strongly in favor of dementia præcox during the phases of dementia-episodes, but their ephemeral character, their appearance and disappearance, their brief duration, finally the persistence of the confusion, of weakness of the attentive power, the mode of reaction to external stimuli, and the characteristic unsystematized, intellectual functions, the nature of the onset and termination of the affection—all these features led to the diagnosis of a chronic confusional psychosis. The disease lasted two years and the recovery was complete.

The course of events as they occurred in the present series demonstrate this fact, that at least in some cases only a prolonged observation and a close scrutiny of the psychotic manifestations, especially their intensity, their depth, their relation to the patient's behavior, also more particularly the disproportion between the disturbances in the affective and intellectual spheres—all these characteristics will enable one to make a differential diagnosis.

Through the largest period of the course of the psychotic states their resemblance to those of dementia præcox was, grossly speaking, so in evidence that in the eyes of several psychiatrists who happened to examine some of the cases, once or twice the diagnosis of Kraepelin's disease appeared beyond any doubt and as such, a most unfavorable prognosis was given. In all such cases the duration of the disorder should especially be taken into consideration and an opinion thus formed.

Let us see now what are those special features that led to erroneous diagnoses, also let us consider the distinguishing characteristics that may on first thought be referred to either of the affections under discussion.

One of the most striking manifestations in all the cases was the reaction of the patients to external stimuli, especially when questions were put to them: either no reply at all was obtained (mutism), or else the reply was irrelevant or had no relation whatsoever to the subject of interrogation. Sometimes the patients kept on conversing with themselves as if they continued discussing subjects which they commenced sometime ago. Some of the patients have the facial expression as that of perplexity, surprise, astonishment, as if they understood the questions poorly. It is evident that their attention is laborious. They apparently try to understand the words spoken; and whatever they may say, it is done by them slowly and hesitatingly. They sometimes

lose all notion of time and space, they are disoriented in every direction and in some instances to the extent of forgetting their own names (auto-psychic disorientation of Wernicke). Such an attitude on the part of the patients was noticed not only in the early phases of their psychotic states, but throughout the entire course of their affection. If one compares them in this particular respect with *præcox* individuals, the difference is striking. The latter will respond to stimulation or the questions, although he shows at the same time a more or less considerable amount of incoherence. He listens and replies in accordance with the slight means at his command. In confusional states the patient's attentive power is extremely weak, the outer world is closed to him, because his horizon is extremely narrow, he is absorbed in contemplation of his own disturbances. As to ideas and thoughts, they arise and make their appearance in dementia *præcox* either in response to the will of the patient himself, or to that of another person, but in confusional states there is no such a relationship.

The *præcox* individuals present a striking characteristic of their mnemonic faculties in that their amnesia is progressive and extends from recent to the most remote events. In confusional psychosis the amnesia is not progressive, but variable. An examination in this respect on different days will reveal the fact that in confusion, certain facts will be recalled by the patient and they will be correct in all the essentials. In a *præcox* the loss of memory is definite and final; his amnesia is global.

In carrying out an order or a command the *præcox* will obediently make an attempt but his work will be defective. In confusion, on the contrary, the execution of the order will be correct, but the patient must be constantly reminded and encouraged during the progress of his attempts.

The fundamental mental basis, although variable and changeable, is nevertheless normal in confusion, but the defect lies in the mode of its functioning because the latter is very slow. In dementia *præcox* the intellectual basic condition is very poor and if its functioning is practically normal, the results are bad, because *præcox* has a global amnesia.

The onset of the mental disorder is also different in each of the two affections. A confusional state usually commences more

or less abruptly, its course is rapid, agitation is present and the termination is usually favorable. A *præcox* commences his or her disorder slowly and continues, as a rule, the slow progress, otherwise speaking, his affection is chronic from the very beginning; there is no agitation and the termination is unfavorable.

The cases described above tend to prove that not in all instances the differential diagnosis is easy or clear cut. In many instances the distinction is most delicate. Should confusion present some slight features of dementia, how can one determine which of the symptoms belong to one or to the other, especially in view of the fact that the dement presents sometimes episodic confusional manifestations. Moreover, a confusional state runs sometimes a progressive course towards dementia. How, then, to ascertain the degree of transitory suspension of mental operations and the degree of a threatening final suspension?

The patients of the present study all presented some of the symptoms of *præcox* individuals, but in a very mild degree, although sufficiently conspicuous to suspect dementia. Those symptoms consisted of incoherence, of poverty of judgment, of deficiency in recalling events, of absence of self-criticism, the presence of mental enfeeblement, the presence of catatonic manifestations. With the exception of the latter, all the other symptoms on the other hand presented considerable variability, changing in intensity every few days, and sometimes every other day. As to catatonia, which at one time Kraepelin viewed as characteristic exclusively of dementia *præcox*, it is met with in many other affections, especially in confusional psychosis. But what was particularly striking in the cases of our series, was the persistent disorientation which was highly conspicuous through the entire course of the patient's condition. The apparent enfeeblement of intellect is only transient (what justified some authors to call it acute dementia). Although it may become chronic, it does not change its special characteristics. In dementia *præcox* there is practically speaking no diminution of intellectual power for a period of time. In confusion there is only torpidity, but in dementia *præcox* there is inertia.

Should a *præcox* develop a confusional state, which sometimes may occur, the diagnostic difficulties will increase. We find there the fundamental characteristics of dementia, namely a marked

diminution of the field of cerebration, definite and stable feebleness of judgment, persistent amnesia, total absence of power of criticism, and especially persistence of totality of all these symptoms. To them is added disorientation and unusually apathetic attitude, but while the superimposed disorder presents the characteristic variability of confusion, the former show persistence and total lack of variability. Two cases of our series showed an unusual resemblance to hebephrenia with the characteristic stereotypy in many directions of the latter. They nevertheless ended in complete recovery. They commenced with confusional states following attacks of typhoid fever.

The mixed cases of course, present considerable difficulty in many instances, but repeated examinations and prolonged observation are indispensable for their proper discrimination, and appreciation. In all such cases one may bear in mind also the following differentiating peculiarities:

A confusional individual may, after persistent efforts correct his attitude of surprise or astonishment. If he is not in a state of agitation he looks very ill and is usually bedridden. A *præcox* has not such an appearance. When the confusional element is intense and there is also a stuporous state, the mental energies are in a state of suspension. This is so-called acute dementia referred to above. The difficulty of differentiating it from dementia *præcox* may be considerable, especially since the physical signs usually present are observed in both affections.

The same remarks may be made concerning a confusional state associated with delusional features. Almost in every instance a careful search will reveal the incoherent and confusional impress in the delusional conceptions. Sometimes confusion assumes an agitated form: the words uttered by the patient and the sentences are void of all meaning when put together; the patient's gestures are equally incoherent; he is restless and impulsive. In all such cases the diagnosis from dementia *præcox* may be difficult. But, again, the entire history of a case must be taken into consideration and each individual symptom must be analyzed and scrutinized repeatedly and for a prolonged period of time.

The presence or absence of fever, of albuminuria, the course and the etiological data will frequently assist in elucidating the diagnosis of the two affections. In the anamnesis of the cases

of the present study, we find infectious processes at the conclusion of which the confusional state developed. We find here also instances of confusion following protracted labor, hemorrhages, excessive and uninterrupted mental or physical effort lasting a long period of time. All such cases could be classified as examples of primary mental confusion or exhaustion psychosis, running a chronic course.

To sum up the essential features of the two psychoses studied and observed for a prolonged period on the series of cases of the present essay, the following differential points should be emphasized: First of all, what is frequently considered dementia præcox, because of the impossibility of the individual to judge correctly and because of defective memory, and automatic attitudes, all of which make one suspect a profound and incurable invasion of mental faculties—is often only a confusional psychosis.

The speech in both cases is absurd to the same extent, but the difference lies in the fact that ordinarily the confusional is sometimes capable of giving correct answers, but not so is the case of the præcox. The essential characteristic in dementia præcox lies primarily in a profound invasion of feelings, of emotions, of tendencies even in their most superficial relationship. The incoherence which is evident in the affectivity may even lead to its total suspension. There is, so to speak, a discord in the affect, which later on is gradually substituted by a continuous apathetic state. In this phase of the affection the attentive faculty which at first was irregular and capricious, gradually disappears and a total loss of interest takes its place. As to the intellectual functions, there is a distinct deficit, especially in requirements of a high order, such as generalization, etc., and there is a deficit in the mutual relationship between the intellectual and affective functions. In confusional psychosis the disorder lies chiefly in the attentive faculty in addition to the unsystematized intellectual functions. A state of defective adaptation, orientation and determination is predominant in this affection.

In order to arrive at a positive diagnostic opinion, in order to estimate correctly the mental status of a confusional or of a præcox individual, one must determine the degree of the power of appreciation of their own condition and of that of the surrounding. One must also investigate the cause which brought

about the lack of power of appreciation or of self-criticism. Finally the degree and the genuineness of the intellectual deficit should not be overlooked.

DISCUSSION.

DR. MAYER.—Dementia præcox is an unfortunate concept in psychiatry from which to draw conclusions in prognosis. Not only are there several distinctly different types of reactions included under this term, but our patient's reactions at the time of our observation often denote a condition which time reveals is not the basic one. Schizophrenic types apparently of good prognosis, in later years develop incurable paranoid trends; an apparently negativistic catatonic individual may later on be found to have a situational or reactive psychosis with abrupt and permanent recovery. Since, therefore, I cannot accept Dr. Gordon's point of view, I am unable to agree with his attempt to arrive at a differential diagnosis of acute confusional states and dementia præcox. The stimuli-response type of reaction of toxic states cannot be compared, I believe, with reactions dependent upon inner mechanisms whose origin is far removed in time from the phenomena observed, and which are often overlaid by symbolism. Without a broader psychological viewpoint and without a detailed personality study, an accurate prognosis dependent upon the manifest psychic state during a consultation is neither feasible nor desirable.

DR. GORDON.—I must say that the doctor does not agree with me in the definition of dementia præcox, but as I understood him, he has nothing to say against the diagnosis. The object of the presentation of this was exclusively the differential diagnosis, but not a psychological interpretation of dementia præcox. Probably he did not pay attention to the reading of the paper. When I spoke of differentiation between the two, I meant only the cases of chronic confusional states, not only those that occur after an infectious invasion. Sometimes we are called to examine patients who have been ill for months, maybe years. We find them in a marked confusional state. The question is asked by the doctor, by the family physician, and by the relatives, "Doctor, what do you think is the chance in regard to the future? Will the patient recover or not?" The doctor should have noted that at the outset of my paper I said distinctly that a special chapter, an entirely different one from the psychological interpretation, is a purely bedside practical guide for the purpose of making a differential diagnosis of chronic confusional states. I had in view exclusively the chronic confusional states, and it is a purely practical paper for the purpose of making a diagnosis in order to render a prognosis. There is no doubt that I fully agree with Dr. Mayer with regard to the essentials of dementia præcox. How can one disagree? That is a fundamental disease which has for basis very elaborate disturbance, not only in the mentality, but also in the affectivity.

The object, again I say, of this paper is to simply present a bedside practical guide for the differential diagnosis in cases of chronic confusional insanity.

THE PLACE OF PSYCHIATRY IN THE MEDICAL SCHOOL CURRICULUM.*

By EVERETT S. ELWOOD.

"The art so long, the life how short" might equally well have been said of the study of medicine. For medicine is an art, its study is never ending, and the life of the artist in medicine is far too short to enable him to master medicine to the full extent of its many branches and to the limits of its ever increasing dimensions.

Any careful consideration of the time and attention given to a subject in the medical school curriculum is bound to find the curriculum already seriously crowded. Furthermore, preparation for medicine requires about all of the time that a student can now afford to give.

A study of the place given to psychiatry in the curriculum of our seventy Class A medical schools reveals the fact that the amount of time allotted to this subject varies greatly even in our leading schools.

Sixty hours divided about equally between didactic and clinical work seems to be generally considered by the professor of psychiatry as the irreducible minimum number of hours allowable. We, therefore, find some schools that are placing as much emphasis upon psychiatric teaching as can be expected with our present overcrowded curriculum, yet we find other schools where psychiatry has been crowded into a subordinate place in the department of neurology, and still others where very little emphasis is placed upon either psychiatry or neurology. There are several factors which have conspired to bring about these inconsistencies in the situation. Prominent among these factors have been the extensive reorganization, I might even say reconstruction, of medical education in this country during the last two decades, and the marvelous development in the science of medicine itself which probably transcends any development ever made in twice the time

* Read at the eightieth annual meeting of The American Psychiatric Association, Atlantic City, N. J., June 5, 6, 7, 8, 1924.

by any science or any art in the history of man. The result has been a crowded, rigid curriculum in which psychiatry still has a place but in some instances a smaller place than formerly, and in only a few schools has it been accorded the recognition that modern psychiatry seems entitled to receive.

This wide variation in psychiatric teaching may not be any greater than the variation in other departments of medical education. It may, in fact, be no greater than the wide gap between the standards maintained by the strongest schools in the Class A group, well endowed and well equipped in buildings and personnel, and the standards maintained by those schools whose equipment and endowment are just sufficient to give them the Class A rating.

Mr. Abraham Flexner recently reported to the Congress on Medical Education that his study of European schools and his second survey of American schools, had shown that great progress had been made in this country, and that some of our schools are now equal to the best in Europe. While the group as a whole has moved forward so commendatorily, he believes there is still nearly as much difference between the best and the poorest as there was when his first studies were made fifteen years ago.

The National Board of Medical Examiners is finding through its examinations that courses given in the same subject differ considerably in the various schools.

Dr. O. H. P. Pepper recently had this to say in regard to the courses in physiological chemistry:

As the member of the National Board of Medical Examiners concerned with the examinations in physiologic chemistry, I have been impressed with two facts after studying the questions set in the courses in this subject being given in the various Class A schools of this country. In the first place, the courses apparently vary much in type, more so, I imagine, than is true in any other subject. Topics which occupy a chief position in the course at one school are given but little emphasis at another; the same is true both of lectures and laboratory work. One reason for this state of affairs is that in the time allotted to the course in physiologic chemistry it seems to be difficult or impossible to supply both the requisite amount of the fundamental physical chemistry which most of the students lack on admission and also to emphasize the biologic applications of the various phases of the work.

In consideration of these expressions from Dr. Flexner and Dr. Pepper, we must conclude that psychiatry is not the only sub-

ject in which the instruction varies in type and substance and we must, therefore, exercise considerable patience and extend earnest cooperation in our efforts to secure the extension and development in the courses in psychiatry which will bring the large body of schools up to the minimum approved standard in this subject.

There are many rays of hope appearing over the horizon of medical education indicative of progress in a further extension of the teaching of psychiatry in the undergraduate schools. Some of these changes relate directly to the subject of psychiatry while others will affect the general curriculum and thereby open the way for development and rearrangement of courses in the department of psychiatry. There are also indications that the general practitioner is beginning to realize more than ever, the importance of psychiatry. Dr. Campbell has well expressed this trend as follows:

After analyzing all of the juices that can be readily extracted from the patient and after having X-rayed everything that can be made to cast a shadow, the physician is beginning to believe that possibly back of it all there may be something the matter with the man himself.

Dr. Vincent, President of the Rockefeller Foundation, in a recent summary of medical progress says:

It has been asserted with some reason that in its preoccupation with the diseases of the body, scientific medicine has too much neglected the psychic and social factors. The rapid spread of the cults which invoke various forms of mental suggestion is probably due in some measure to the failure of modern medicine to include in its scope the relations of mental and physical states, to study these in a scientific spirit, and to utilize the healing power of rationally controlled suggestion. Recent progress in psychiatry, the war-time experiences with disorders of the mind, the rise of mental hygiene, and the increased attention being given these subjects in medical schools and at professional meetings, are evidence that the mental aspect of disease is being recognized more fully.

In Dr. Salmon's address on mind and medicine delivered at the opening of Columbia University last September, he encouraged us to believe that real progress is being made in bridging the gap between medicine as a whole and mental medicine. After relating some of the tendencies leading medical education on toward this goal he goes on to say:

Evidence that these influences are, in reality, bringing about a new attitude toward mind and medicine is afforded by the following remark made by Dr. Ray Lyman Wilbur in his address last June as President of the

American Medical Association. Speaking particularly of the personal relationship between physician and patient, without which his store of medical knowledge cannot be effectively employed, he said: "The human mind, the human will, and human personality will be as important for the medical student of today when he comes to full practice as typhoid fever, small-pox and cholera have been for the physicians in the past. Moral and spiritual qualities play as large a part as do the more physical of the biologic processes."

In commenting on Dr. Wilbur's statement, Dr. Salmon continues:

If that view represents not merely the formulation of an ideal but a practical guide for action what changes may we not witness during the next few years in medical education, medical practice and medical research.

In research, we shall no longer see two men who are studying different phases of essentially the same biologic process separated by an unseen but impassable wall, simply because one is best fitted by training and experience to use the methods of anatomy, physiology, or biochemistry and the other, those of psychopathology. Side by side these men will work, employing anatomical, physiological, or biochemical terms to describe what they learn from the study of *brain processes* and psychological terms to describe what they learn regarding *mind processes*. One will deal chiefly with states of brain, and the other chiefly with states of mind, but each will be familiar with the others point of view and know the value of his approach. Then, and then only, will the mysteries of brain and mind and their relations to each other be revealed.

Dr. Adolf Meyer has well expressed a similar thought in his address on Psychiatry and Life Problems when he says:

The mind and soul of man have indeed had a hard time. To this day investigators have suffered under the dogma that minds must be treated as purely subjective entity, something that can be studied only by introspection or at least only with ultra-accurate instruments—always with the idea that common sense is all wrong in its psychology. Undoubtedly it was, so long as it spoke of a mind and soul as if what was called so had to be, even during life, mysterious and inaccessible, something quite different from any other fact of natural-history.

The great step was taken when all of life was seen again in its broad relations, without any special theory but frankly as common sense finds it, viz., as the activities and behavior of definite individuals—very much as Aristotle has put it—"living organisms in their forms or activity and behavior."

Encouraging reports of progress have been received from the deans of several medical schools. Time permits me to quote but two. Dean Ordway of the Albany Medical College describes the

changes about to be made in the psychiatric courses in his school which will provide a course of lectures in the second year introductory to the study of psychiatry, a series of 32 didactic lectures in the third year covering in a general way the field of psychiatry and a course of study in the fourth year including clinical lectures and clinical clerk section work. He then says:

These changes are being made because we do not consider our previous course adequate for present needs. I believe personally that there would be fewer fads in medicine and surgery and less demand for or use of irregular practice and cults, if the students were impressed early in their career with the importance of the mental point of view and the reaction of patients for contented, efficient living.

Dean Rushmore of Tufts College Medical School reports changes to be made in the curriculum of his school and says:

The lines along which I think changes should be made are those advocated by Dr. Meyer and in part carried out by him at Johns Hopkins. The basic idea is to regard the patient as a person and begin with the study of his whole personality, with a certain amount of psycho-analysis in order that the physician may understand the psychological factors involved in dealing with his patients.

In reviewing the courses in psychiatry in the various schools I have been impressed by the fact that several of our schools are giving some of the work in the pre-clinical years. At Hopkins, Dr. Meyer gives a course of 11 hours in medical psychology to the first year students. This is followed by courses in each of the three remaining years. At Cornell, Columbia, Harvard, Michigan and others, similar courses are given in the second year, followed by work in third and fourth year. It is a great gain to the student to be given the mental point of view early in his medical course and a distinct gain for psychiatry to take its place among the so-called fundamental medical sciences instead of being obliged to wait until the fourth year when students too frequently receive a few didactic lectures dealing largely with differential diagnosis and a few days visit to what they regard as the asylum or "mad house."

The courses given in medical psychology or psychopathology at several of the schools would seem to be of great value to the student himself in addition to being introductory to the study of psychiatry. This will be noted from the following subjects of the

lectures in psychopathology given at Columbia to the second year medical students:

1. Introductory. Mind and Medicine.
2. The Structural Basis for Mind. (Mind and Body.)
3. General Concepts of the Instincts and Emotions.
4. The "Ego-Instinct" Group.
5. The "Sex-Instinct" Group.
6. The "Herd-Instinct" Group.
7. Cultural Modifications of Instinctive Behavior.
8. Mental Mechanisms (I).
9. Mental Mechanisms (II).
10. Abnormal Types of Mental Adaptation I. The Psychoneuroses.
11. Abnormal Types of Mental Adaptation II. The Psychoses.
12. Abnormal Types of Mental Adaptation III. Anomalies of Mental Development, Crime, Drug and Alcohol Addictions.
13. The Psychopathology of General Illness.
14. The Foundations for Social Psychiatry.
15. The Foundations for Mental Hygiene.

The scope of this course makes one ask, why not give a somewhat similar course to all college students especially to teachers and those who will be our future leaders in thought and action. I understand that some of the students in the Literary Department of the University of Michigan are now given similar courses by the staff of the State Psychopathic Hospital. The slogan of Socrates, "Know thyself," might well be used more frequently today. Before attempting to teach others how to live should we not learn something of the fundamentals of human behavior?

One of the problems most frequently discussed by medical educators is the necessity of better correlation between the clinical and the pre-clinical studies. Will not the teaching of psychiatry, if spread over three or four years, be of some help in bringing about a closer union between the sciences and the clinical courses?

How is the teaching of psychiatry in the medical schools related to the problems confronting the members of this Association? You tell me that one of your greatest difficulties is to secure men for the medical staffs of your hospitals in sufficient quantity and of the right quality. Greater emphasis given to psychiatry in the schools should result in more psychiatrists in the future, especially if the courses are of such a nature and the professor of such a type that the students will see the fundamental value of psychiatry in

medicine, and be filled with enthusiasm for one of the most interesting branches of medicine.

In attempting to interest more men in the life-time study of psychiatry the attention of this Association should be called to the great importance of making the student internships or clerkships as interesting and valuable to the students as possible. The old position of clinical assistant should be restored in many of our state hospitals. These students should be treated as members of the staff and be permitted to live in officers' quarters. These men have all had at least two years of college training before beginning the study of medicine, over half of them hold college degrees. They are men of intelligence and maturity and naturally lose their enthusiasm for psychiatry, in part at least, if housed with attendants by night and by day confined to the chronic wards.

Many of our hospitals for mental diseases are cooperating to the fullest extent with their nearby medical schools. Others might do more, both in teaching and in providing the students with better clinical facilities. Dr. Wilbur has said that the larger part of medicine will ultimately be taught in the dispensaries. Many schools would be helped by having more and better dispensaries in mental diseases made available to their students.

The field of research in psychiatry is in great need of further development. Much of this research must be done in state supported institutions, and I know full well the difficulty of securing adequate financial support for this phase of the work, but that should not deter us from keeping everlastingly at it.

A state now contributing \$15,000,000 annually for the maintenance of its hospitals for the insane, besides millions more for construction work could well afford to spend an appreciable sum in support of research endeavors to discover the means for preventing and curing the seven thousand and more new mental cases developing within its borders annually.

Post graduate courses leading to the M. A. degree and the Ph. D. degree in psychiatry should be made available for those physicians who choose to specialize in psychiatry.

The mental hygiene movement, I am told, needs more and better psychiatrists. Activities which will interest more physicians in the study of psychiatry will, therefore, directly help this cause in promoting sound habits of thought and action.

In conclusion I should say that psychiatry has not been sold to the general profession nor to many of our leading medical educators quite so effectively as it might have been. You who are members of the American Psychiatric Association are the sole accredited agents of psychiatry in America. As individuals you have accomplished much and will accomplish more in the future.

As an organization your voice should be heard in the councils of those national organizations most actively concerned with the development and rearrangement of the curricula of our medical schools. National organizations of other specialties are being heard—why not yours?

There are today in the United States of America seventy medical schools that have been rated as Class A by the Council on Medical Education of the American Medical Association. We know that many of them are not Class A in psychiatry. Should we not with renewed determination do all that can be done to speed the day when there will be seventy medical schools in this country that are Class A in psychiatry.

Association and Hospital Notes and News.

THE EIGHTY-FIRST ANNUAL MEETING OF THE AMERICAN PSYCHIATRIC ASSOCIATION.—The eighty-first annual meeting of The American Psychiatric Association will be held in Richmond, Va., at the Hotel Jefferson on May 12, 13, 14, and 15, 1925, under the presidency of Dr. William A. White of Washington, D. C.

Richmond and its vicinity offer so many attractions in addition to the excellent program provided by the Committee on Program, that it is hoped that there will be an unusually large attendance.

Members coming from the north and northwest will have an opportunity of visiting Baltimore, where the Henry Phipps Psychiatric Clinic of the Johns Hopkins Hospital, and the Sheppard and Enoch Pratt Hospital, as well as the Spring Grove State Hospital at Catonsville, the Springfield State Hospital at Sykesville and the Mount Hope Retreat, all within easy driving distance from the center of the city, may be visited with advantage.

From Baltimore excellent roads lead, by way of Washington, to Richmond for those who wish to go by automobile. The distance is a trifle over 170 miles.

In Washington there are so many things that may be seen with profit as well as pleasure, that it is difficult to enumerate them.

Of course to members of the Association, the Government Hospital for Mental Disorders, St. Elizabeth, will be the central point of interest.

Side excursions from Washington may well include visits to Alexandria, Mount Vernon the home of Washington, the National Cemetery at Arlington, and the home of General Lee.

From Baltimore a visit to Annapolis and the Naval Academy will repay liberally for the time spent.

On the road from Washington to Richmond one passes through Fredericksburg where many points of historic interest connected with the colonial period and the Civil War are to be found. Here still stands the home of the mother of Washington.

On the trip from Washington the route passes directly or within a short distance of many of the important battlefields of the Civil War including Chancellorsville and Spottsylvania Court House. Near Ashland, through which the tourist passes, Patrick Henry and Henry Clay were born.

Around Richmond, almost within its suburbs, indeed, were fought the battles of Seven Pines, Cold Harbor, Mechanicsville, Malvern Hill, Fair Oaks, and Gaines Mill. Within the city is St. John's Church, in which Patrick Henry immortalized himself by his eloquence. The White House of the Confederacy, the wartime home of Jefferson Davis, is a museum filled with relics of the Civil War. On another street is the house in which the family of General Robert E. Lee lived while he was in command of the Confederate forces. And in the new Battle Abbey are the artists' conceptions of the leaders and the great events of that war. Nearby is the Confederate Home in which many of the followers of Lee and Jackson are spending their last days as guests of the State of Virginia.

All of these objects, and many more, our members may see. For instance, in the old, old, stone house on Main street, the Poe Memorial, are priceless relics of Edgar Allan Poe, once a citizen of Richmond.

The morning of the first day of the session will be taken up with addresses of welcome from the Governor of Virginia, Hon. E. Lee Trinkle, and the Mayor of the city, the reports of the Council and of various committees and the President's Annual Address.

In the afternoon there will be two sections of the Association in session, one devoted to problems of hospital administration, the other to histopathological and biochemical subjects.

There has been no formal program announced for Tuesday evening, but the Committee of Arrangements has something in view we are informed.

Wednesday the thirteenth will be given over to the reading and discussion of papers devoted mainly to psychiatric problems of childhood and adolescence, and in the evening the Annual Address will be delivered by Mr. Clarence Darrow of Chicago.

On Thursday, the Association and its guests will be entertained at the State Hospital at Williamsburg, some fifty miles to the east of Richmond.

The Eastern State Hospital, at Williamsburg, Va., is the oldest public hospital for the insane in the United States. It was incorporated by the state assembly or House of Burgesses in 1768 as "The Publick Hospital for Persons of Insane and Disordered Mind." An act of 1769 is entitled "An Act to Make Provision for the Support, Maintenance of Idiots, Lunatics and Other Persons of Unsound Mind." The hospital was opened October 12, 1773, since which time it has passed through many and varied experiences.

The Revolutionary War seriously disturbed its operations, and the Civil War to a still greater extent. In 1876, 1885 and 1902 the hospital was the scene of fires, the one in 1885 destroying the center building and its wings. The center building was completed in September, 1773, one month before the institution was opened.

As an evidence that the colonial Virginians brought with them not only the manners and customs of England, but some of the phrases in common use in the old home, it may be cited that in the library of William and Mary College, Williamsburg, is a map of Williamsburg, dated 1780, on which the hospital is designated as the "Mad House or Bedlam."

The first medical officer of the institution to bear the title of Superintendent was Dr. John M. Galt, Jr., who was appointed Superintendent July 1, 1841, and served until May, 1862, when the commanding officer of the Federal Forces which had captured the city assumed control of the hospital and appointed one of the medical staff of the Army, Dr. Wager, as Superintendent. Dr. Galt died within a few days after removal from his position.

Dr. Galt belonged to a family who had long been connected medically with the Williamsburg institution. The first "Keeper" of the then new institution, appointed in 1773, was James Galt.

Dr. John Minson Galt, a surgeon in the Revolutionary Army, was appointed visiting physician to the hospital in 1795. In 1800 Dr. Alexander D. Galt succeeded his father and served as physician to the hospital until his death in November, 1840, to be succeeded in time by his son Dr. John M. Galt, Jr.

All these men were of high standing in their profession. Dr. A. D. Galt was educated at William and Mary College and after a term of study under his father completed his medical education in London where he was a pupil of Sir Astley Cooper; his son,

John M., after receiving his A. B. at William and Mary College received his M. D. from the University of Pennsylvania in 1841.

He was a linguist of no mean attainments, beside an excellent command of Latin and Greek, he knew French and Spanish and read the Koran in Arabic.

Dr. John M. Galt was one of the founders of the Association of Medical Superintendents of American Institutions for the Insane. In 1846 Dr. Galt published a volume (New York: Harper Bros.) entitled "The Treatment of Insanity," which is, we believe, the first work on the treatment of mental disorders published by a Superintendent of an American institution for the insane.

From 1773 to 1862, eighty-nine years, men of the name of Galt served the institution, sixty-seven years of this long period was taken up by the service of three medical men of that name, as we have narrated.

A portion of the day at Williamsburg will be given over to the reading of papers. One of the features of the visit to the Williamsburg Hospital will be an address by Douglas S. Freeman, Ph. D., editor of the *Richmond News-Leader*, who will tell the visiting members some of the important parts played by the citizens of Williamsburg and vicinity in American history.

Those who heard Dr. Freeman's address at the meeting of the Association at Fortress Monroe in 1915 will be prepared for an intellectual treat.

At Williamsburg is the College of William and Mary older than any college in the United States save Harvard. Amongst its alumni are found the names of many of the founders of our republic. Williamsburg was for almost a hundred years capital of Virginia, when Virginia included in its domain territory reaching westward towards the Pacific. In the Bruton Parish Church at Williamsburg is the baptismal font from which Pocahontas was baptized into the Episcopal church, and around this ancient church lie the mortal remains of many of Virginia's noble dead.

Seven miles from Williamsburg, in the James River, is Jamestown Island, from which the civilization thereabouts sprang. In another direction, twelve miles away, is Yorktown, where the Revolutionary struggle was concluded by Cornwallis's surrender to George Washington.

After returning from Williamsburg Round Table Conferences will be held Thursday evening at the Hotel Jefferson upon the following topics: (1) Administration; (2) clinical psychiatry; (3) social psychiatry; (4) occupational therapy; (5) laboratory work.

On Friday, the last day of the session, papers upon the psychoneuroses and general psychiatric subjects will be presented.

The following persons have been given a place on the program for the meeting: Doctors Malcolm Bliss, A. A. Brill, H. A. Bunker, Clifford B. Farr, Robert H. Foster, Charles E. Gibbs, Bernard Glueck, Roscoe Hall, William Healy, J. Allen Jackson, Smith Ely Jelliffe, George Kirby, Joseph Looney, Karl Menninger, Clinton P. McCord, Clarence Oberndorf, John Rathbone Oliver, Horace V. Pike, George K. Pratt, Harry S. Sullivan, Annie E. Taft, Frankwood E. Williams, and William Wright.

The hope and expectation of the Program Committee that Doctors Kraepelin and Plaut of Munich would be present at the meeting and give addresses appear to be doomed to disappointment.

These two distinguished psychiatrists are in this country making some special observations, but the time at their disposal will not permit their attendance at the meeting.

OCCUPATIONAL THERAPY EXHIBIT AT RICHMOND.—It has been decided to have an occupational therapy exhibit at the meeting of The American Psychiatric Association in Richmond, Va., May 12, 13, 14, and 15, 1925.

Dr. William R. Dunton, Chairman of the Occupational Therapy Committee, has sent us the following notice:

All those desiring to participate in the occupational therapy exhibit to be held in conjunction with the annual meeting to be held at Richmond, Va., are requested to notify the chairman of the committee, Dr. W. R. Dunton, Jr., Harlem Lodge, Catonsville, Md., who will forward shipping directions.

The Association has not met in Richmond for 25 years, and an exhibit has never been held there, so that there is opportunity to show the general public of this locality the value of this measure. For this reason it seems well to make the exhibit as instructive and comprehensive as possible. Case histories should be given to illustrate improvement made. This, and the utilization of waste and the economic value, as well as the æsthetic pleasure derived, should all be emphasized.

It is to be hoped that there will be a general and prompt reply to Dr. Dunton's appeal.

MEETING OF THE NATIONAL ASSOCIATION FOR THE STUDY OF EPILEPSY.—This Association, of which Dr. G. Kirby Collier of Rochester, N. Y., is President and Dr. Arthur L. Shaw of Camden, N. J., Secretary-Treasurer, will hold its annual meeting for 1925 at the Hotel Jefferson, Richmond, Va., May 11 and 12.

A cordial invitation is extended to the members of The American Psychiatric Association to attend its sessions.

Papers will be presented by Doctors Clark, Tilney, Gibbs, Menninger, Damon, Tucker, Patterson, Branham, Jordan, Bondreau and others.

In Memoriam.

ARTHUR W. HURD.

Dr. Arthur William Hurd died on the 17th of November, 1924, in Los Angeles. With his death comes again a vivid reminder that the ranks of American psychiatrists of a generation ago are fast closing. These were pioneers in the present-day methods of treatment of such vast significance and importance to modern medicine. They had prejudices to overcome and many old-fashioned ideas to overthrow. To them came the task and privilege to diffuse an understanding of the nature of psychiatric cases, their necessities and the prospects of betterment under well directed hospital care. An extremely difficult part in their propaganda was to remove from the public mind the *custodial* and substitute therefor the welfare and the curative conception. The writer of this recalls vividly a long and serious controversy with a newspaper editor as to the desirability of rechristening asylums "hospitals." The editor strongly advocated adherence to the original name as accurately representing the character of the institution—a place of refuge—and was firm in the opinion that a designation indicating that psychiatric cases were adapted to any hospital scheme was misleading.

Tact, conscientiousness, humanistic impulses, devotion, and sincerity were indispensable to success in this transition period and all these attributes Arthur Hurd possessed in high degree. He had the refinement of sentiment and the enthusiasm in aims of the best type of idealist, but withal that sound judgment and pronounced executive ability, rare enough among idealists and strikingly lacking in the doctrinaire. With stable equilibrium and a ground-floor attitude in practical affairs, he was tolerant and squared his own conduct by the measure of generosity and good will. He was mindful of the expedient and could yield in minor points, but never lost sight of a desirable goal and was tenacious and undeviating in the attempt to attain it. His attitude toward patients was not alone professional—it was paternalistic. His rela-

tion with his medical staff and corps of employees was sympathetic and more that of counselor and friend than directing mind. Their trials were his concern, their achievements his satisfaction.

While hospital administration was still obviously materialistic and economy a consideration ever in view, he was among the first to actively feature its medical possibilities and values. To this end the Buffalo State Hospital at an early period placed itself in cooperation with research work, with vocational efforts, with training school activities. It was, I believe, the second psychiatric hospital in this country to establish a training school for nurses and this became at once a highly successful venture. Arthur Hurd's major aim was a scientific basis for the care of patients and elimination of the custodial notion. He encouraged by precept and example the intensive study of cases.

Broken in health by overwork, he moved to California in September, 1919. There the relatively care-free, out-of-door life prolonged his own. His appreciation of the scenic and climatic attractions of that country was lively and perennial and his enthusiasms were a source of inspiration to others. He was drawn to Southern California by associations in early life and knew it intimately, having negotiated on horseback desert trails where now stand prosperous and populous cities.

He was an incomparable host, a dependable and lovable friend. His hearty laugh was contagious; he was an accomplished conversationalist and possessed an abundant store of accurate information. His sense of humor helped him over many a hard place in the difficult days preceding his death. The recollection of his companionship is a delight. His life was a benefaction to others, and those who were happily favored with his friendship are of one mind that he merits the reward of the righteous.

Dr. Hurd was born in Galesburg, Illinois, December 26, 1858. He was the son of an accomplished physician, Henry Stirling, and Eleanor Eunice (Hammond) Hurd. He received from Knox College the degrees of A. B. in 1880 and of A. M. in 1883; was graduated from the College of Physicians and Surgeons, Medical Department of Columbia University, in 1883. He married Mary L. Wheeler of Buffalo, June 20, 1895; was appointed Assistant Physician to the Buffalo State Hospital in 1885, and served in that capacity until 1894, when he was elected to the Superintendency

made vacant by the death of Dr. J. B. Andrews. He resigned in 1918. He was Instructor in and Professor of Psychiatry in the University of Buffalo from 1892 to 1894; was a member of the Buffalo Academy of Medicine (President, 1905), of the American Psychiatric Association, of the American Medical Association; was a member and sometime President of the Erie County Medical Society; held the office of President Knox College Alumni Club of Southern California from 1919 to 1923; was an active and influential member of the Society of Sons of the American Revolution, of the University and the Saturn Clubs of Buffalo. He held membership in the Hollywood Chamber of Commerce, the Hollywood Athletic and Country Clubs. He has contributed to medical journals and professional societies papers on: Prevention and Early Treatment of Mental Diseases; Clinical Aspects of Auto-Intoxication; Differential Diagnosis of Paretic and Pseudo-Paretic States; Paresis and Cerebral Syphilis; Disorders of Sleep; Psychoanalysis; The Prolongation of Life; Prognosis in Insanity; Arteritis; Recognition of Early Symptoms of Insanity; Incorrect Diagnosis; Mental Phases of Syphilis; Problems of Diagnosis; Needs of the Insane and Proposed New Legislation; Etiology of Paresis; The Mentally Defective; Shakespearian Medicine; The Physician in Literature.

He was a member of the Presbyterian Church of Buffalo and of West Hollywood. He is survived by his widow and son, Arthur, and a brother, Dr. Henry M. Hurd, Emeritus Superintendent of Johns Hopkins Hospital.

C. B. BURR.

DR. WILLIAM A. STONE.

Dr. William A. Stone of Kalamazoo, Michigan, died at his home on February 24, 1924. Dr. Stone received his medical education at the medical department of the University of Michigan. Very shortly after his graduation in 1885 he was appointed assistant physician to the Northern Michigan Asylum now the Traverse City State Hospital on the staff of Dr. J. D. Munson, medical superintendent of that institution. In 1891 he was offered and accepted the position of assistant medical superintendent of the Michigan Asylum for the Insane, now known as the Kalamazoo

State Hospital and continued in that office until 1910 when he resigned and retired from institutional life and opened an office in Kalamazoo as a consultant in nervous and mental diseases.

Dr. Stone was a fellow of the American Psychiatric Association, a fellow of the American Medical Association, a member of the Michigan Medical Society, the Kalamazoo Academy of Medicine, serving this last organization one year as president, and a member of the Detroit Society of Neurology and Psychiatry.

Dr. Stone was peculiarly skilled in the recognition and interpretation of symptoms not only in the field of neuro-psychiatry but in general internal medicine. He also was gifted with the knowledge of hospital needs and hospital sanitation which together with a natural business trend specially endowed him with well-balanced personal equipment for hospital administration.

Dr. Stone wrote but little for publication. His address on retiring from the presidency of the Kalamazoo Academy of Medicine entitled "Dementia Americana" was written in popular vein and attracted considerable favorable comment from the lay press. At the time of his death he was preparing for the American Anthropological Association a paper entitled, "Certain Racial Asymmetries of Crania." But his contribution to medical lore consisted chiefly in discussion of various papers presented at medical conventions.

He was married on June 22, 1898, to Dr. Harriette O. McCalmont, of Franklin, Pennsylvania. A daughter and a son were born to this union. The doctor leaves a host of friends not only in the medical profession but among the best elements of business and professional men of his home city and throughout the State of Michigan.

HERMAN OSTRANDER.

DR. ALMA EVELYN FOWLER.

Alma Evelyn Fowler, M.D., died September 29, 1923. Dr. Fowler was born in St. Louis, Missouri, in 1886. Sometime after her birth, her family moved to Lowell, Massachusetts, where she attended school, graduating from the Lowell High School in 1904. After graduating from high school, she turned her attention to the study of medicine which she pursued under difficulties, her father

having died. She graduated from the Tufts Medical School in 1914, some time after which she was appointed Medical Intern in the Psychopathic Hospital, Boston, Massachusetts, which position she held until September, 1917, when she was appointed Assistant Physician in the Taunton State Hospital, Taunton, Massachusetts. She was an enthusiastic student of psychiatry, a faithful and conscientious hospital physician, caring for her patients with a sympathetic devotion that made her beloved of all. She was tactful and considerate in her relations with her professional associates, and won the respect and regard of all with whom she came in contact. Soon after her appointment to the Taunton State Hospital her health began to fail, and the remainder of her life was spent in a losing fight with an obscure disorder that baffled medical diagnosis and treatment. In August, 1921, she resigned her position at Taunton, as she was unable to perform her duties on account of illness. She spent some time in Florida in a vain search for health, and then returned to Boston where she died. Her mother, to whom she was tenderly attached, survives her.

Dr. Fowler was a member of The American Psychiatric Association and many local medical organizations.

DR. WALLACE J. C. AUBRY.

Dr. Wallace J. C. Aubry, formerly a senior assistant physician at the Binghamton State Hospital, died suddenly in Albany, New York, on January 23, 1924.

Dr. Aubry was born in Montreal, Canada, on October 11, 1879. He attended common school and a commercial academy in Montreal; he later attended St. Mary's College in Montreal, for seven and a half years. He received his M. D. degree from Laval University in 1909, later taking a post-graduate course at the Albany Medical College, from which he received the degree of M. D. in 1910.

Following graduation from the Albany Medical College he entered private practice in the northern part of New York State. In 1911 he married Miss Dora Thomas, of Granville, New York.

In April, 1918, he enlisted in the United States Army; was stationed at Chickamauga Park, Camp Greenleaf, Georgia. He was in the army service about six months and attained the rank of captain.

He entered the service of the Manhattan State Hospital on September 23, 1918, as a medical interne, later being made assistant physician. On October 3, 1919, he was transferred to the Kings Park State Hospital as an assistant physician, and was later promoted to senior assistant physician. On May 3, 1923, he was transferred to the Binghamton State Hospital as senior assistant physician, serving in this grade until the date of his resignation, December 31, 1923.

For some time previous to his transfer to the Binghamton State Hospital his general health had not been good, the climate on Long Island apparently not agreeing with him and it was for this reason that he requested a transfer. During his residence in the Binghamton State Hospital his general condition did not improve, his heart giving him a good deal of concern from time to time. It was on account of his continued ill health that he resigned on the date above mentioned. Dr. Aubry is survived by his widow and one child, Dorothy, aged 11 years.

Appointments, Resignations, Etc.

- ABRAMSON, DR. JOSEPH I., appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., July 1, 1924.
- ADAMS DR. EARL H., appointed Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., December 6, 1924, and resigned December 21, 1924.
- ADELMAN, DR. SARAH, Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., promoted to Assistant Physician October 1, 1924.
- AMES, DR. GEORGE C., appointed Medical Interne at Central Islip State Hospital at Central Islip, N. Y., August 1, 1924.
- ANDERSON, DR. FLORENCE, appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., December 2, 1924.
- AUSLANDER, DR. JACOB, Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., resigned July 20, 1924.
- BACHELDER, DR. FRANK S., Assistant Medical Superintendent of Pontiac State Hospital at Pontiac, Michigan, resigned after 18 years service to enter private practice in Pontiac.
- BAGLEY, DR. CARLETON T., Assistant Physician at Buffalo State Hospital at Buffalo N. Y., resigned July 15, 1924.
- BAKER, DR. GRACE, formerly Interne at Sheppard and Enoch Pratt Hospital at Towson, Md., appointed Assistant Physician at Harlem Lodge at Catonsville, Md., March 15, 1925.
- BANCROFT, DR. H. A., Assistant Physician at Hartford Retreat at Hartford, Conn., for seven years, resigned to enter practice of psychiatry in Hartford.
- BIGGS, DR. BYRON E., Superintendent of Indiana State School for Feeble-Minded Youths at Fort Wayne, resigned January 1, 1925.
- BLUMENFELD, DR. EDWARD, appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., September 18, 1924.
- BOICE, DR. HARRY W., appointed Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., July 1, 1924.
- BOCKNER, DR. MAXWELL, appointed Medical Interne at Kings Park State Hospital at Kings Park, N. Y., December 3, 1924.
- BONNEY, DR. C. A., appointed Chief Executive Officer of Boston Psychopathic Hospital
- BRAGMAN, DR. LEWIS J., Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., resigned November 1, 1924.
- BREWSTER, DR. GUY O., Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., resigned October 16, 1924.
- BROGDEN, MISS MARGARET S., a member of State Board of Mental Hygiene of Maryland, resigned.
- BURGER, DR. BERTHA, Assistant Physician at Western State Hospital at Staunton, Va., appointed Assistant Physician at Gundry Sanatorium (Athol), Catonsville, Md.
- BURNS, DR. GEOFFREY C. H., Senior Assistant Physician at Central Islip State Hospital at Central Islip, N. Y., transferred to Manhattan State Hospital at Wards Island, N. Y., December 19, 1924.
- CARON, DR. S., appointed Assistant Physician Hospital St. Michel-Archange, Maatal, Quebec. This appointment was erroneously reported in the issue of the JOURNAL for October, 1924, as Dr. A. Carvin.
- CARTER, MRS. ALLEN T., appointed a member of State Board of Mental Hygiene of Maryland.
- CASTNER, DR. CHARLES W., Superintendent of East Texas Hospital for the Insane at Rush, transferred to Southwestern Insane Asylum at San Antonio, Texas.

- CHANDLER, DR. HENRY M., appointed Assistant Physician at Utica, N. Y., August 15, 1924.
- COCHRANE, DR. CHARLES S., appointed Consultant and Visiting Physician at Brooklyn State Hospital at Brooklyn, N. Y., July 1, 1924.
- CONNELLY, DR. LEO A., Medical Intern at Hudson River State Hospital at Poughkeepsie, N. Y., transferred to Buffalo State Hospital, N. Y., October 13, 1924.
- COVERER, DR. HARRY, appointed Medical Intern at Manhattan State Hospital at Wards Island, N. Y., August 1, 1924.
- COZBY, DR. HAROLD O., appointed Medical Intern at Binghamton State Hospital at Binghamton, N. Y., July 30, 1924.
- DALRYMPLE, DR. LEOLIA, Intern at Sheppard and Enoch Pratt Hospital at Towson, Md., resigned, February 15, 1925.
- DEAN, DR. ARCHIBALD S., Psychiatrist to National Committee for Mental Hygiene, appointed Pediatrician in Division of Maternity, Infancy, and Child Hygiene of New York State Department of Health.
- DE BERRY, DR. ELLIT, Assistant Physician at St. Elizabeth's Hospital at Washington, D. C., appointed Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md., November 3, 1924.
- DENISON, DR. LOUIS L., appointed Medical Intern at Rochester State Hospital at Rochester, N. Y., July 1, 1924.
- DEUTSCH, DR. HANS, appointed Medical Intern at Manhattan State Hospital at Wards Island, N. Y., September 20, 1924.
- DUNTON, DR. WILLIAM RUSH, JR., Research Assistant at Sheppard and Enoch Pratt Hospital at Towson, Md., appointed Medical Director at Harlem Lodge at Catonsville, Md., December 1, 1924.
- DUTTON, DR. H. H., Assistant Physician at Yankton State Hospital at Yankton, South Dakota, resigned February 1, 1924.
- DYER, DR. WILLIAM, appointed Medical Intern at Manhattan State Hospital at Wards Island, N. Y., July 1, 1924.
- EBAUGH, DR. FRANKLIN G., Director Neuropsychiatric Department Philadelphia General Hospital has resigned this position and accepted the appointment of Professor of Psychiatry at the University of Colorado, and Director of the Colorado Psychiatric Hospital, Denver, Colorado.
- ELROD, DR. ROBERT H., Third Assistant Physician at Central State Hospital at Nashville, Tenn., has taken up post-graduate studies at the University of Pennsylvania.
- EMERY, DR. EDGAR V., Second Assistant Physician at Norwalk State Hospital and Examining Physician at the Whittier State School, California, appointed Director of Los Angeles Child Guidance Clinic at Los Angeles, Calif.
- EWERHARDT, DR. PAUL J., Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md., resigned October 31, 1924, and granted a fellowship by the National Committee for Mental Hygiene to take child guidance study in Boston.
- FARIBAULT, DR. JULIUS H., Medical Intern at Binghamton, N. Y., resigned July 31, 1924.
- FAUST, DR. CARLTON L., appointed Dental Intern at Binghamton State Hospital at Binghamton, N. Y., December 4, 1924.
- FERNALD, DR. WALTER ELMORE, Superintendent of Massachusetts School for Feeble Minded at Waverley, Mass., since 1887, died November 27, 1924, aged 65.
- FLETCHER, DR. CHRISTOPHER, appointed First Assistant Physician at Buffalo State Hospital at Buffalo N. Y., July 15, 1924.
- FRANZ, DR. SHEPHERD IVORY, Psychologist and Scientific Director at St. Elizabeth's Hospital at Washington, D. C., appointed to a position with the Department of Psychology of University of California, Southern Branch, at Los Angeles.
- FROATS, DR. ESLEY R., Medical Intern at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to Assistant Physician, December 9, 1924.
- FROOMES, DR. SARA A., appointed Assistant Physician at Utica State Hospital at Utica, N. Y., September 1, 1924.
- GESHELIN, DR. HARRY, Medical Intern at Manhattan State Hospital at Wards Island, N. Y., resigned August 21, 1924.

- GILLES, DR. AUGUSTUS SIMON, Assistant Physician at Northern Hospital for the Insane at Winnebago, Wis., died October 7, 1924, aged 52.
- GOLDBACH, DR. MATER, Medical Internes at Hudson River State Hospital at Poughkeepsie, N. Y., resigned November 30, 1924.
- GOLDBERG, DR. LEON H., appointed Medical Internes at Middletown State Homeopathic Hospital at Middletown, N. Y., August 4, 1924, and resigned August 31, 1924.
- GOLDBERG, DR. LOUIS, Medical Internes at Manhattan State Hospital at Wards Island, N. Y., resigned September 15, 1924.
- GOODSON, DR. JOSEPH ARTHUR, for nine years Superintendent of Eastern State Hospital for the Insane at Lexington, Ky., accidentally drowned August 29, 1924, while bathing in his home, aged 49.
- GRADY, DR. LILIAN R., Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned August 31, 1924.
- GRAY, DR. EARLE V., First Assistant Physician at Gowanda State Hospital at Helmuth, N. Y., promoted to Medical Superintendent December 1, 1924.
- HARKIN, DR. GEORGE H., appointed Medical Internes at Buffalo State Hospital at Buffalo, N. Y., October 21, 1924.
- HATCHER, DR. GEORGE A., First Assistant Physician at Central State Hospital at Nashville, Tenn., for 10 years, appointed Assistant at Manhattan Eye, Ear, Nose and Throat Hospital at New York City.
- HAY, DR. JAMES C., appointed Medical Internes at Manhattan State Hospital at Wards Island, N. Y., July 1, 1924, and resigned September 19, 1924.
- HENSHAW, DR. GEORGE R., Medical Internes at Middletown State Homeopathic Hospital at Middletown, N. Y., promoted to Assistant Physician, December 1, 1924, and resigned to enter private practice in East Bloomfield, N. Y., December 20, 1924.
- HIBBARD, DR. RODGER J., Medical Internes at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned November 19, 1924.
- HOUZE, DR. HARRY J., Medical Internes at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to Assistant Physician December 9, 1924.
- HUNTLEY, DR. WELLINGTON B., Resident Physician at Michigan Reformatory, appointed Director of Institutional Health Administration for Michigan.
- HURD, DR. ARTHUR WILLIAM, formerly Superintendent of Buffalo State Hospital at Buffalo, N. Y., died November 19, 1924, at Los Angeles, Calif., aged 65.
- JACKSON, JAMES G., Farm Manager of Indiana State School for Feeble-Minded Youths at Fort Wayne, and brother of the governor of the state, appointed Superintendent January 1, 1925.
- JAMES, DR. ELMER A., Medical Internes at St. Lawrence State Hospital at Ogdensburg, N. Y., promoted to Assistant Physician December 9, 1924.
- JANNEY, DR. FRANCIS, Medical Internes at Manhattan State Hospital at Wards Island, N. Y., resigned September 20, 1924.
- JERRELL, DR. PAUL M., appointed Medical Internes at Gowanda State Homeopathic Hospital at Helmuth, N. Y., August 1, 1924, and promoted to Assistant Physician December 1, 1924.
- JOHNSON, DR. WILLIAM J., Superintendent of the Texas Hospital for Senile Insane, has been offered the Superintendency of East Texas Hospital for Insane at Rush.
- JUDGE, DR. RAY H., Medical Internes at Central Islip State Hospital at Central Islip, N. Y., resigned October 1, 1924, to accept a position at the New York Lying-In Hospital.
- KAHN, DR. WILLIAM FREDERICK, formerly Superintendent of State Hospital No. 4 at Farmington and of State Hospital No. 2 at St. Joseph, Missouri, died suddenly September 2, 1924, of cerebral hemorrhage, aged 75.
- KANNER, DR. LEO, appointed Assistant Physician at Yankton State Hospital at Yankton, South Dakota.
- KELLS, DR. GEORGE WOOD, appointed Assistant Physician at Hartford Retreat at Hartford, Conn.
- LABURT, DR. H. A., appointed Assistant Physician at Buffalo State Hospital at Buffalo, N. Y., August 1, 1924.

- LANE, DR. BESSIE EVANS, appointed Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., September 1, 1924, and changed to Medical Internes December 16, 1924.
- LANG, DR. DOROTHY, appointed Medical Internes at Manhattan State Hospital at Wards Island, N. Y., July 5, 1924.
- LAVINE, DR. ISRAEL, appointed Medical Internes at Kings Park State Hospital at Kings Park, N. Y., August 25, 1924.
- LEE, DR. JUDAH, Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., resigned July 6, 1924.
- LEVIN, DR. H. L., appointed Director of Clinical Psychiatry at Buffalo State Hospital at Buffalo, N. Y., July 15, 1924.
- MACDONALD, DR. AELDRED A., appointed Medical Internes at Kings Park State Hospital at Kings Park, N. Y., September 11, 1924.
- MARCUS, DR. DAVID, Medical Internes at Manhattan State Hospital at Wards Island, N. Y., resigned August 31, 1924.
- MAXWELL, DR. THOMAS M., Medical Internes at Central Islip State Hospital at Central Islip, N. Y., resigned September 30, 1924, and appointed Medical Internes at Manhattan State Hospital at Wards Island, October 1, 1924.
- MAYER, DR. FREDERICK, appointed Medical Internes at Kings Park State Hospital at Kings Park, N. Y., November 25, 1924.
- MCGINN, DR. WILLIAM J., appointed Medical Internes at Kings Park State Hospital at Kings Park, N. Y., July 1, 1924.
- MCCLIN, DR. THOMAS G., Assistant Managing Officer of Jacksonville State Hospital at Jacksonville, Illinois, resigned.
- MCNEELY, DR. WILLIAM M., appointed Medical Internes at Binghamton State Hospital at Binghamton, N. Y., December 6, 1924.
- MILLER, DR. HOWARD D., formerly Assistant Physician at Northern State Hospital for Insane at Sedro Wooley, and at Western State Hospital at Fort Steilacoom, Washington, died January 24, 1925, at Seattle.
- MORRIS, DR. GEORGE D., appointed Medical Internes at Manhattan State Hospital at Wards Island, N. Y., October 16, 1924.
- OVERHOLSER, DR. WINFRED, Assistant Superintendent of Medfield State Hospital at Harding, Mass., appointed Assistant to the Commissioner of Mental Diseases.
- PHILLIPS, DR. THOMAS G., appointed Assistant Physician at Massillon State Hospital at Massillon, Ohio.
- PRATT, DR. GEORGE K., Medical Director of the Massachusetts Society for Mental Hygiene, Boston, has resigned to accept the position of Assistant Medical Director of the National Committee for Mental Hygiene, New York.
- PRESTON, DR. GEORGE H., appointed Director of the Psychiatric Clinic of the Child's Memorial Clinic of Richmond, Va.
- PRESTON, DR. JOHN, Superintendent of State Lunatic Asylum at Austin, Texas, resigned January 15, 1925.
- PRIDY, DR. ALBERT SIDNEY, Superintendent of Southwestern State Hospital at Marion, Va., died January 14, 1925, of Hodgkin's disease, aged 59.
- RAPHAEL, DR. THEOPHILE, Assistant Physician at State Psychopathic Hospital at Ann Arbor, Mich., promoted to Assistant Professor of Psychiatry at University of Michigan Medical School.
- RAVINITZKY, DR. NATHAN, appointed Assistant Physician at Manhattan State Hospital at Wards Island, N. Y., July 21, 1924.
- REYNOLDS, DR. ROY R., Assistant Physician at Massillon State Hospital at Massillon, Ohio, resigned.
- RICHARDSON, DR. HORACE K., formerly with Veterans' Bureau and stationed at St. Elizabeth's Hospital at Washington, D. C., appointed Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md.
- RONA, DR. MAURICE J., Medical Internes at Kings Park State Hospital at Kings Park, N. Y., resigned November 27, 1924.

- ROSS, DR. JOHN W., appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., August 19, 1924.
- ROY, DR. C. S., Assistant Physician Hospital St. Michel-Archange, Mastai, Quebec, appointed Superintendent, vice Dr. M. D. Brochu, resigned.
- RYAN, DR. MARK C., appointed Medical Interne at Hudson River State Hospital at Poughkeepsie, N. Y., October 15, 1924, and resigned November 26, 1924.
- SAUNDERS, DR. ELEANORA B., Assistant Physician at Sheppard and Enoch Pratt Hospital at Towson, Md., returned from a four months trip spent in study in Europe, January 1, 1925.
- SILVERMAN, DR. MOSES, appointed Medical Interne at Manhattan State Hospital at Wards Island, N. Y., September 1, 1924, and left the service December 10, 1924.
- SNEIERSON, DR. HYMAN, appointed Medical Interne at Binghamton State Hospital at Binghamton, N. Y., June 1, 1924.
- SPRINGER, DR. JOB G., Superintendent of Southwestern Insane Asylum at San Antonio, Texas, transferred to State Lunatic Asylum at Austin, Texas.
- STANLEY, DR. ALFRED M., Medical Interne at Buffalo State Hospital at Buffalo, N. Y., promoted to Assistant Physician December 1, 1924.
- STECKEL, DR. HARRY A., Senior Assistant Physician at Kings Park State Hospital at Kings Park, N. Y., transferred to Binghamton State Hospital at Binghamton, N. Y., September 1, 1924.
- STEIN, DR. NOBE ELY, appointed Medical Interne at Central Islip State Hospital at Central Islip, N. Y., December 14, 1924.
- THOMPSON, MR. HENRY J., connected with the Hartford Retreat at Hartford, Conn., for more than 46 years and Steward since 1895, resigned on account of ill health.
- TIEBOUT, DR. HARRY M., Assistant Physician at Bloomingdale Hospital at White Plains, N. Y., has been added to the staff of the Division of Prevention of Delinquency of the National Committee for Mental Hygiene as Fellow in Psychiatry, and assigned to Demonstration Clinic No. 2 at Cleveland, Ohio, December 1, 1924.
- TIMEN, DR. A. W., appointed Oto-Rhinologist at Brooklyn State Hospital at Brooklyn, N. Y., August 1, 1924.
- TORACCO, DR. RALPH, appointed Medical Interne at Brooklyn State Hospital at Brooklyn, N. Y., July 18, 1924, and promoted to Assistant Physician August 1, 1924.
- TOWNSEND, DR. THEODORE L., Senior Assistant Physician at Willard State Hospital at Willard, N. Y., retired on pension September 30, 1924.
- TIPTON, DR. WILLIAM REUBEN, Assistant Commissioner of Mental Diseases of Massachusetts, and formerly Superintendent of Osawatomie State Hospital at Osawatomie, Kansas, died September 1, 1924, at Boston, aged 64.
- TRENTZSCH, DR. PHILIP J., granted a fellowship by the National Committee for Mental Hygiene to take child guidance study in Boston.
- TRUITT, DR. RALPH P., formerly Medical Director of Illinois Society for Mental Hygiene, appointed Director of Division on Prevention of Delinquency of the National Committee for Mental Hygiene.
- VAUX, DR. C. L., Senior Assistant Physician at Central Islip State Hospital at Central Islip, N. Y., promoted to First Assistant Physician, July 21, 1924.
- WALKER, DR. ROBERT P., appointed Medical Interne at Binghamton State Hospital at Binghamton, N. Y., September 4, 1924, and resigned October 31, 1924.
- WATSON, DR. WILLIAM A., appointed Medical Interne at Binghamton State Hospital at Binghamton, N. Y., August 18, 1924, and resigned September 30, 1924.
- WEARNE, DR. RAYMOND G., Senior Assistant Physician at Manhattan Hospital at Wards Island, N. Y., resigned September 30, 1924, and appointed Clinical Director at Central Islip State Hospital at Central Islip, N. Y., October 1, 1924.
- WHITE, DR. KATHLEEN, appointed Medical Interne at St. Lawrence State Hospital at Ogdensburg, N. Y., November 28, 1924.

WHITMIRE, DR. CLARENCE L., appointed Assistant Managing Officer of Jacksonville State Hospital at Jacksonville, Illinois.

WITTE, DR. MAX E., appointed Chief of Staff at Clarinda State Hospital at Clarinda, Iowa.

WORK, DR. HUBERT, formerly President of American Psychiatric Association, now Secretary of the Interior, was given the honorary degree of Doctor of Laws by University of Pennsylvania at the University Day exercises, February 23, 1925.

WORTHINGTON, DR. HARRY J., Senior Assistant Physician at St. Lawrence State Hospital at Ogdensburg, N. Y., resigned December 31, 1924, to accept the appointment of First Assistant Physician at Harlem Valley State Hospital at Wingate, N. Y.

SUBJECT INDEX

NOTE.—Abbreviations: [Rev] denotes a book review, [N] an editorial note, [Obit] an obituary, [Abs] an abstract.

- Acriflavine, Experimental therapy with in Epidemic Encephalitis, Edward A. Strecker and Gordon F. Willey, 631.
- Administrative problems, The, of the Boston Psychopathic Hospital, W. Franklin Wood, 297.
- Alien Insane, Immigration and the problem of the, Spencer L. Dawes, 449.
- American Psychiatric Association, eightieth annual meeting [N], 149.
- American Psychiatric Association, Eighty-first annual meeting [N], 583, 775.
- American Psychiatric Association, Proceedings of the eightieth annual meeting, 333.
- Appointments, Resignations, etc., 403, 787.
- Aseptic meningitis in the treatment of dementia præcox, Robert S. Carroll, Everett S. Barr, R. Grant Barry, and David Matzke, 673.
- Aubry, Dr. Wallace J. C. [Obit], 785.
- Biochemical study, A, of the blood in mental disorders, Joseph M. Looney, 29.
- Blood in mental disorders, A biochemical study of the, Joseph M. Looney, 29.
- Boylston medical prizes of Harvard Medical School [N], 584.
- Brain tumor, A study of one hundred and two ventricular fluids in cases of, Bernard J. Alpers, 509.
- Brain tumors, Psychic manifestations in cases of, Frederick P. Moersch, 705.
- Case, A, of manic-depressive reaction with psychic impotence, Oswald H. Boltz, 57.
- Chapter, A, from the evolution of medical administration, William L. Russell, 125.
- Childhood inadequacy in relation to the internal glandular system, Walter Timme, 499.
- Children, Resistant behavior of, David M. Levy, 503.
- Chorea, Social significance of Huntington's, Estella M. Hughes, 537.
- Clinical diagnosis, On the significance of certain nerve cell changes, probably toxic, in relation to, Otis F. Kelly, 227.
- Constitution and disposition in psychiatric relations, Albert M. Barrett, 245.
- Curriculum Medical School, The place of Psychiatry in the, Everett S. Elwood, 767.
- Dementia præcox as a type of hereditary degeneration, Leland B. Alford, 623.
- Dementia præcox, Aseptic meningitis in the treatment of, Robert S. Carroll, Everett S. Barr, R. Grant Barry, and David Matzke, 673.

- Dementia præcox, Prolonged confusional states simulating, Alfred Gordon, 757.
- Dementia præcox, Sexual behavior and secondary sexual hair in female patients with manic-depressive psychoses, and the relation of these factors to, Charles E. Gibbs, 41.
- Dr. Lundholm on the creative imagination, Morton Prince, 521.
- Dr. Singer joins the Editorial Board [N], 150.
- Edenharter, Dr. George F. [Obit], 155.
- Eighty-first annual meeting of The American Psychiatric Association [N], 583, 775.
- Epidemic encephalitis. Four cases complicated by pregnancy and a preliminary report of experimental therapy by intravenous injections of acriflavine, Edward A. Strecker and Gordon F. Willey, 631.
- Epilepsy, Meeting of the National Association for the Study of [N], 780.
- Fowler, Dr. Alma Evelyn [Obit], 784.
- Functional planning of hospitals for mental disease, Sullivan W. Jones and Howard Scott, 317.
- General paralysis of the insane during senescence, Ira A. Darling, 751.
- Glandular system, Childhood inadequacy in relation to the internal, Walter Timme, 499.
- Granger, William Davis, M. D. [Obit], 158.
- Hall, G. Stanley [Obit], 151.
- Heredity studies, A report on some, George W. T. Mills, 103.
- Histological findings, negative, in experimental organic processes, Samuel T. Orton, 599.
- Hospital, A mental, of the fabulous forties, Earl D. Bond, 527.
- Hospital, How to secure public support of a state, Charles Edward Thompson, 309.
- Hospital, The administrative problems of the Boston Psychopathic, W. Franklin Wood, 297.
- Hospitals for mental disease, Functional planning of, Sullivan W. Jones and Howard Scott, 317.
- Hospitals, Methods employed in the control of mental, H. W. Mitchell, 285.
- Hospitals, Standardization of [N], 399.
- Homicide in Massachusetts, Albert Warren Stearns, 725.
- How to secure public support of a state hospital, Charles Edward Thompson, 309.
- Hun, Dr. Henry [Obit], 153.
- Hurd, Dr. Arthur W. [Obit], 781.
- Imagination, Dr. Lundholm on the creative, Morton Prince, 521.
- Immigration and the problem of the alien insane, Spencer L. Dawes, 449.
- Interpretations of manic-depressive phases, Earl D. Bond and G. E. Partridge, 643.

Kottman reaction, The, as applied to psychiatric cases, Theophile Raphael and George J. Smith, 161.

La Medicine Psychologique, Pierre Janet [Rev], 586.

Lundholm, Dr., On the creative imagination, Morton Prince, 521.

Lyon, Samuel Backus, M. D. [Obit], 157.

Malarial treatment, The, of paretic neurosyphilis, Nolan D. C. Lewis, Lois D. Hubbard, and Edna G. Dyar, 175.

Manic-depressive phases, Interpretation of, Earl D. Bond and G. E. Partridge, 643.

Manic-depressive psychoses, Sexual behavior and secondary sexual hair in female patients with, and the relation of these factors to dementia præcox, Charles E. Gibbs, 41.

Manic-depressive reaction, A case of with psychic impotence, Oswald H. Boltz, 57.

Mechanism, The, of the psychoneuroses, Tom A. Williams, 431.

Meeting of the National Association for the Study of Epilepsy [N], 780.

Mental examinations of college men, Martin W. Peck, 605.

Mental hospital, A, of the fabulous forties, Earl D. Bond, 527.

Mental hygiene, What is? A definition and an outline, E. Stanley Abbot, 261.

Methods employed in the control of mental hospitals, H. W. Mitchell, 285.

Negative histological findings in experimental organic processes, Samuel T. Orton, 599.

Nerve cell changes, On the significance of, probably toxic, in relation to clinical diagnosis, Otis F. Kelly, 227.

New secretary of the American Psychiatric Association [N], 402.

Occupational therapy exhibit at Richmond [N], 779.

On the significance of certain nerve cell changes, probably toxic, in relation to clinical diagnosis, Otis F. Kelly, 227.

Paralysis, treatment of general [N], 143.

Paretic neurosyphilis, The malarial treatment of, Nolan D. C. Lewis, Lois D. Hubbard, and Edna G. Dyar, 175.

Pellagra. Report of a case, Lydia B. Pierce, 237.

Period, The, of the renaissance in psychiatry [N], 575.

Presidential address, Thomas W. Salmon, 1.

Primitive mentality and the racial unconscious, William A. White, 663.

Problem, The, of the psychoneuroses, Edward E. Mayer, 419.

Problems of the personality of school children and the responsibility of the community for dealing with them, C. Macfie Campbell, 471.

Proceedings of Societies:

American Psychiatric Association. Proceedings of the eightieth annual meeting, 333.

- Program for the next annual meeting [N], 150.
- Prolonged confusional states simulating dementia præcox, Alfred Gordon, 757.
- Psychiatry and public health, Lewellys F. Barker, 13.
- Psychiatry, The place of, in the Medical School Curriculum, Everett S. Elwood, 767.
- Psychic manifestations in cases of brain tumor, Frederick P. Moersch, 705.
- Psychoneuroses, The—A problem in re-education, Austen Fox Riggs and William B. Terhune, 407.
- Psychoneuroses, The mechanism of the, Tom A. Williams, 431.
- Psychoneuroses, The problem of the, Edward E. Mayer, 419.
- Psychoneurotic girl, The re-education of a, Jessie Taft, 477.
- Psychopathic hospital, A, and clinic for New York City [N], 583.
- Psychopathic personality, The relation of absence of the sentiments as outlined by Shand to some cases labelled, Samuel N. Clark, 135.
- Public health, Psychiatry and, Lewellys F. Barker, 13.
- Re-education, The, of a psychoneurotic girl, Jessie Taft, 477.
- Re-education, The psychoneuroses—A problem in, Austen Fox Riggs and William B. Terhune, 407.
- Relation, The, of absence of the sentiments as outlined by Shand to some cases labelled psychopathic personality, Samuel N. Clark, 135.
- Renaissance in Psychiatry, The period of the [N], 575.
- Report, A, on some heredity studies, George W. T. Mills, 103.
- Report of a case of benign stupor showing unusual ideational content, L. D. Hubbard, 93.
- Resistant behavior of children, David M. Levy, 503.
- Schizophrenia: Its conservative and malignant features, Harry Stack Sullivan, 77.
- Schizoid and syntonetic factors in neuroses and psychoses, A. A. Brill, 589.
- School children, Problems of the personality of, and the responsibility of the community for dealing with them, C. Macfie Campbell, 471.
- Senescence, General paralysis of the insane during, Ira A. Darling, 751.
- Sexual behavior and secondary sexual hair in female patients with manic-depressive psychoses, and the relation of these factors to dementia præcox, Charles E. Gibbs, 41.
- Singer, Dr., joins the Editorial Board [N], 150.
- Social significance of Huntington's chorea, Estella M. Hughes, 537.
- Some emotional problems seen in the superior child, Marion E. Kenworthy, 489.
- Standardization of hospitals [N], 399.
- Stone, Dr. William A. [Obit], 783.
- Study, A, of one hundred and two ventricular fluids in cases of brain tumor, Bernard J. Alpers, 509.

- Stupor, Report of a case of benign, showing unusual ideational content, L. D. Hubbard, 93.
- Superior child, Some emotional problems seen in the, Marion E. Kenworthy, 489.
- Syntonic and Schizoid factors in neuroses and psychoses, A. A. Brill, 589.
- Treatment of general paralysis [N], 143.
- Unconscious, Primitive mentality and the racial, William A. White, 663.
- Ventricular fluids, A study of one hundred and two, in cases of brain tumor, Bernard J. Alpers, 509.
- What is mental hygiene? A definition and an outline, E. Stanley Abbot, 261.
- Youngling, Dr. George S. [Obit], 159.

AUTHOR'S INDEX

- Abbot, E. Stanley, What is mental hygiene? A definition and an outline, 261.
- Alford, Leland B., Dementia præcox as a type of hereditary degeneration, 623.
- Alpers, Bernard J., Study of one hundred and two ventricular fluids in cases of brain tumor, 509.
- Barker, Lewellys F., Psychiatry and public health, 13.
- Barr, Everett S., R. Grant Barry, David Matzke, and Robert S. Carroll, Aseptic acute exudative meningitis in the treatment of dementia præcox, 673.
- Barrett, Albert M., Constitution and disposition in psychiatric relations, 245.
- Barry, R. Grant, David Matzke, Robert S. Carroll, and Everett S. Barr, Aseptic acute exudative meningitis in the treatment of dementia præcox, 673.
- Boltz, Oswald H., A case of manic-depressive reaction with psychic impotence, 57.
- Bond, Earl D., A mental hospital of the fabulous forties, 527.
- Bond, Earl D., and G. E. Partridge, Interpretations of manic-depressive phases, 643.
- Brill, A. A., Schizoid and syntonetic factors in neuroses and psychoses, 589.
- Campbell, C. Macfie, Problems of the personality of school children and the responsibility of the community for dealing with them, 471.
- Carroll, Robert S., Everett S. Barr, R. Grant Barry, and David Matzke, Aseptic acute exudative meningitis in the treatment of dementia præcox, 673.
- Clark, Samuel N., The relation of absence of the sentiments as outlined by Shand to some cases labelled psychopathic personality, 135.
- Darling, Ira A., General paralysis of the insane during senescence, 751.
- Dawes, Spencer L., Immigration and the problem of the alien insane, 449.
- Dyar, Edna G., Nolan D. C. Lewis, Lois D. Hubbard, and, The malarial treatment of paretic neurosyphilis, 175.
- Elwood, Everett S., The place of psychiatry in the medical school curriculum, 767.
- Gibbs, Charles E., Sexual behavior and secondary sexual hair in female patients with manic-depressive psychoses, and the relation of these factors to dementia præcox, 41.
- Gordon, Alfred, Prolonged confusional states simulating dementia præcox, 757.

- Hubbard, L. D., Report of a case of benign stupor unusual ideational content, 93.
- Hubbard, Lois D., Nolan D. C. Lewis, and Edna G. Dyar, The malarial treatment of parietic neurosyphilis, 175.
- Hughes, Estella M., Social significance of Huntington's chorea, 537.
- Jones, Sullivan W., and Howard Scott, Functional planning of hospitals for mental disease, 317.
- Kelly, Otis F., On the significance of certain nerve cell changes, probably toxic, in relation to clinical diagnosis, 227.
- Kenworthy, Marion E., Some emotional problems seen in the superior child, 489.
- Levy, David W., Resistant behavior of children, 503.
- Lewis, Nolan D. C., Lois D. Hubbard, and Edna G. Dyar, The malarial treatment of parietic neurosyphilis, 175.
- Looney, Joseph M., A biochemical study of the blood in mental disorders, 29.
- Matzke, David, Robert S. Carroll, Everett S. Barr, and R. Grant Barry, Aseptic acute exudative meningitis in the treatment of dementia praecox, 673.
- Mayer, Edward E., The problem of the psychoneuroses, 419.
- Mills, George T. W., A report on some heredity studies, 103.
- Mitchell, H. W., Methods employed in the control of mental hospitals, 285.
- Moersch, Frederick P., Psychic manifestations in cases of brain tumors, 705.
- Orton, Samuel T., Negative histological findings in experimental organic processes, 599.
- Partridge, G. E., and Earl D. Bond, Interpretations of manic-depressive phases, 643.
- Peck, Martin W., Mental examinations of college men, 605.
- Pierce, Lydia B., Pellagra. Report of a case, 237.
- Prince, Morton, Dr. Lundholm on the creative imagination, 521.
- Raphael, Theophile, and George J. Smith, The Kottmann reaction as applied to psychiatric cases, 161.
- Riggs, Austen Fox, and William B. Terhune, The psychoneuroses—A problem in re-education, 407.
- Russell, William L., A chapter from the evolution of medical administration, 125.

- Salmon, Thomas W., Presidential address, 1.
- Scott, Howard, Sullivan W. Jones and, Functional planning of hospitals for mental disease, 317.
- Smith, George J., Theophile Raphael and, The Kottmann reaction as applied to psychiatric cases, 161.
- Stearns, Albert Warren, Homicide in Massachusetts, 725.
- Strecker, Edward A., and Gordon F. Willey, Epidemic encephalitis. Four cases complicated by pregnancy and a preliminary report of experimental therapy by intravenous injections of acriflavine, 631.
- Sullivan, Harry Stack, Schizophrenia: Its conservative and malignant features, 77.
- Taft, Jessie, The re-education of a psychoneurotic girl, 477.
- Terhune, William B., and Austen Fox Riggs, The psychoneuroses—A problem in re-education, 407.
- Thompson, Charles Edward, How to secure public support of a state hospital, 309.
- Timme, Walter, Childhood inadequacy in relation to the internal glandular system, 499.
- White, William A., Primitive mentality and the racial unconscious, 663.
- Williams, Tom A., The mechanism of the psychoneuroses, 431.
- Willey, Gordon F., and Edward A. Strecker, Epidemic encephalitis. Four cases complicated by pregnancy and a preliminary report of experimental therapy by intravenous injections of aciflavine, 631.
- Wood, W. Franklin. The administrative problems of the Boston Psychopathic Hospital, 297.

LIST OF ILLUSTRATIONS

Sexual Behavior and Secondary Sexual Hair in Female Patients with Manic-Depressive Psychoses, and the Relation of These Factors to Dementia Præcox.

Table I (Chart), 44.

A Report on Some Heredity Studies.

Chart I, 107; Chart II, 108; Chart III, 109; Chart IV, 110; Charts V and VI, 111; Chart VII, 112; Charts VIII and IX, 113; Chart X, 114; Chart XI, 115; Chart XII, 116; Charts XIII and XIV, 117; Chart XV, 118; Chart XVI, 119; Chart XVII, 120; Chart XVIII, 121; Chart XIX, 122.

The Malarial Treatment of Paretic Neurosyphilis.

Chart I, 188; Chart II, 190; Chart III, 192; Chart IV, 194; Chart V, 195; Plates I-X, Figs. 1-20, 212.

On the Significance of Certain Nerve Cell Changes, Probably Toxic, in Relation to Clinical Diagnosis.

Plate XI, Figs. 1, 2, 228.

Pellagra.

Plates XII and XIII, Figs. 1-6, 240.

Frontispiece.—Thomas W. Salmon. Facing 407.

Resistant Behavior of Children.

Summary Graphs I-III, 504; IV, 505.

Social Significance of Huntington's Chorea.

Diagram I, 539; Map Showing Location of Michigan Choreics, 570.

Interpretations of Manic-Depressive Phases.

Figs. 1-5, 644.

Psychic Manifestations in Cases of Brain Tumors.

Plates XIV-XV, Figs. 1-4, 718.



The American Journal of Psychiatry

THE AMERICAN JOURNAL OF PSYCHIATRY, the official organ of the American Psychiatric Association, is now in its eighty-first volume (Vol. IV, new series). Its editorial control is in the hands of a committee of the American Psychiatric Association consisting of EDWARD N. BRUSH, M. D., of Baltimore; CHARLES MACFIE CAMPBELL, M. D., of Boston; ALBERT M. BARRETT, M. D., of Ann Arbor, Mich.; GEORGE H. KIRBY, M. D., of New York, and H. DOUGLAS SINGER, M. D., of Chicago, Ill., with the collaboration of other alienist physicians at home and abroad.

Communications for the JOURNAL and books for review should be addressed to DR. EDWARD N. BRUSH, Hamilton Road, Mt. Washington, Baltimore, Md. Exchanges should be addressed, care of Sheppard and Enoch Pratt Hospital, Towson, Baltimore Co., Md.

The JOURNAL is published quarterly and the volumes begin with the July number. The subscription price is five dollars for the volume, except to members of the Association, who receive the JOURNAL at a special rate of three and one-half dollars. Canadian subscriptions five dollars and twenty-five cents; foreign subscriptions, five dollars and fifty cents. This includes postage.

Subscriptions, remittances and business communications should be sent to

THE JOHNS HOPKINS PRESS,
BALTIMORE, MARYLAND.